Department of Defense
Fiscal Year (FY) 2018 Budget Estimates

May 2017

Navy

Justification Book Volume 3 of 5

Research, Development, Test & Evaluation, Navy

Budget Activity 5

The estimated cost for this report or the Department of Navy (ON) is $48,774.

he estimated total cost or supportin the ON bud et usti ication material is appro imately $1,142,960 or the 2017 iscal year. his includes $76,659 in supplies and $1,066,301 in labor.

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Research, Development, Test and Evaluation, Navy

For expenses necessary for basic and applied scientific research, development, test and evaluation, including maintenance, rehabilitation, lease, and operation of facilities and equipment, $18,805,400,000 to remain available for obligation until September 30, 2019.

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Department of Defense
FY 2018 President's Budget Request
Exhibit R-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

Appropriation	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO
Research, Development, Test & Eval, Navy	18,333,041	18,076,818	18,376,384	35,747	163,447		163,447
Total Research, Development, Test & Evaluation	18,333,041	18,076,818	18,376,384	35,747	163,447		163,447

Other RDT&E Budget Activities Not Included in the Research, Development, Test and Evaluation Title

National Defense Sealift Fund	36,289
Total Not in Research, Development, Test & Evaluation	36,289

Department of Defense
FY 2018 President's Budget Request
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Total Obligational Authority
(Dollars in Thousands)

Appropriation	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Research, Development, Test & Eval, Navy	18,112,565	18,539,831		18,539,831	17,675,035	130,365	17,805,400
Total Research, Development, Test & Evaluation	18,112,565	18,539,831		18,539,831	17,675,035	130,365	17,805,400
Other RDT&E Budget Activities Not Included in the Research, Development, Test and Evaluation Title							
National Defense Sealift Fund					18,622		18,622
Total Not in Research, Development, Test & Evaluation					18,622		18,622

Department of Defense
FY 2018 President's Budget Request
Exhibit R-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

Summary Recap of Budget Activities	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO
Basic Research	648,642	542,970	542,970				
Applied Research	951,575	861,151	861,151				
Advanced Technology Development	680,933	736,988	736,988				
Advanced Component Development & Prototypes	4,929,981	4,662,867	4,707,367	41,897	77,397		77,397
System Development & Demonstration	6,236,999	6,025,655	6,112,003				
Management Support	1,286,493	853,736	918,322				
Operational Systems Development	3,598,418	3,592,934	3,697,066	36,426	128,626		128,626
Undistributed		800,517	800,517	-42,576	-42,576		-42,576
Total Research, Development, Test & Evaluation	18,333,041	18,076,818	18,376,384	35,747	163,447		163,447
Summary Recap of FYDP Programs							
Strategic Forces	162,023	196,948	196,948				
General Purpose Forces	1,328,376	1,447,043	1,514,004				
Intelligence and Communications	818,572	713,042	713,042				
Research and Development	14,468,006	13,638,282	13,833,716	41,897	77,397		77,397
Central Supply and Maintenance	27,563	52,526	52,526				
Administration and Associated Activities	569	800,517	800,517	-42,576	-42,576		-42,576
Space							
Classified Programs	1,527,932	1,228,460	1,265,631	36,426	128,626		128,626
Total Research, Development, Test & Evaluation	18,333,041	18,076,818	18,376,384	35,747	163,447		163,447

Department of Defense
FY 2018 President's Budget Request
Exhibit R-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

Summary Recap of Budget Activities	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Basic Research	542,970	542,970		542,970	595,901		595,901
Applied Research	861,151	861,151		861,151	886,079		886,079
Advanced Technology Development	736,988	736,988		736,988	686,342		686,342
Advanced Component Development & Prototypes	4,704,764	4,784,764		4,784,764	4,218,714	27,710	4,246,424
System Development & Demonstration	6,025,655	6,112,003		6,112,003	6,362,102		6,362,102
Management Support	853,736	918,322		918,322	945,757		945,757
Operational Systems Development	3,629,360	3,825,692		3,825,692	3,980,140	102,655	4,082,795
Undistributed	757,941	757,941		757,941			
Total Research, Development, Test & Evaluation	18,112,565	18,539,831		18,539,831	17,675,035	130,365	17,805,400
Summary Recap of FYDP Programs							
Strategic Forces	196,948	196,948		196,948	201,735		201,735
General Purpose Forces	1,447,043	1,514,004		1,514,004	1,675,797	12,800	1,688,597
Intelligence and Communications	713,042	713,042		713,042	751,779		751,779
Research and Development	13,680,179	13,911,113		13,911,113	13,589,349	27,710	13,617,059
Central Supply and Maintenance	52,526	52,526		52,526	43,035		43,035
Administration and Associated Activities	757,941	757,941		757,941	1,749		1,749
Space					47,244		47,244
Classified Programs	1,264,886	1,394,257		1,394,257	1,364,347	89,855	1,454,202
Total Research, Development, Test & Evaluation	18,112,565	18,539,831		18,539,831	17,675,035	130,365	17,805,400

Department of Defense
FY 2018 President's Budget Request
Exhibit R-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO
Summary Recap of Non-RDT&E Title FYDP Programs							
Mobility Forces	36,289						
Total Research, Development, Test & Evaluation	36,289						

Department of Defense
FY 2018 President's Budget Request
Exhibit R-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Summary Recap of Non-RDT&E Title FYDP Programs							
Mobility Forces					18,622		18,622
Total Research, Development, Test & Evaluation					18,622		18,622

Department of the Navy
FY 2018 President's Budget Request
Exhibit R-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

Summary Recap of Budget Activities	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO
Basic Research	648,642	542,970	542,970				
Applied Research	951,575	861,151	861,151				
Advanced Technology Development	680,933	736,988	736,988				
Advanced Component Development & Prototypes	4,929,981	4,662,867	4,707,367	41,897	77,397		77,397
System Development & Demonstration	6,236,999	6,025,655	6,112,003				
Management Support	1,286,493	853,736	918,322				
Operational Systems Development	3,598,418	3,592,934	3,697,066	36,426	128,626		128,626
Undistributed		800,517	800,517	-42,576	-42,576		-42,576
Total Research, Development, Test & Evaluation	18,333,041	18,076,818	18,376,384	35,747	163,447		163,447
Summary Recap of FYDP Programs							
Strategic Forces	162,023	196,948	196,948				
General Purpose Forces	1,328,376	1,447,043	1,514,004				
Intelligence and Communications	818,572	713,042	713,042				
Research and Development	14,468,006	13,638,282	13,833,716	41,897	77,397		77,397
Central Supply and Maintenance	27,563	52,526	52,526				
Administration and Associated Activities	569	800,517	800,517	-42,576	-42,576		-42,576
Space							
Classified Programs	1,527,932	1,228,460	1,265,631	36,426	128,626		128,626
Total Research, Development, Test & Evaluation	18,333,041	18,076,818	18,376,384	35,747	163,447		163,447

Department of the Navy
FY 2018 President's Budget Request
Exhibit R-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

Summary Recap of Budget Activities	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Basic Research	542,970	542,970		542,970	595,901		595,901
Applied Research	861,151	861,151		861,151	886,079		886,079
Advanced Technology Development	736,988	736,988		736,988	686,342		686,342
Advanced Component Development & Prototypes	4,704,764	4,784,764		4,784,764	4,218,714	27,710	4,246,424
System Development & Demonstration	6,025,655	6,112,003		6,112,003	6,362,102		6,362,102
Management Support	853,736	918,322		918,322	945,757		945,757
Operational Systems Development	3,629,360	3,825,692		3,825,692	3,980,140	102,655	4,082,795
Undistributed	757,941	757,941		757,941			
Total Research, Development, Test & Evaluation	18,112,565	18,539,831		18,539,831	17,675,035	130,365	17,805,400
Summary Recap of FYDP Programs							
Strategic Forces	196,948	196,948		196,948	201,735		201,735
General Purpose Forces	1,447,043	1,514,004		1,514,004	1,675,797	12,800	1,688,597
Intelligence and Communications	713,042	713,042		713,042	751,779		751,779
Research and Development	13,680,179	13,911,113		13,911,113	13,589,349	27,710	13,617,059
Central Supply and Maintenance	52,526	52,526		52,526	43,035		43,035
Administration and Associated Activities	757,941	757,941		757,941	1,749		1,749
Space					47,244		47,244
Classified Programs	1,264,886	1,394,257		1,394,257	1,364,347	89,855	1,454,202
Total Research, Development, Test & Evaluation	18,112,565	18,539,831		18,539,831	17,675,035	130,365	17,805,400

Department of the Navy
FY 2018 President's Budget Request
Exhibit R-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO	Sec
1	0601103N	University Research Initiatives	01	140,998	101,714	101,714					U
2	0601152N	In-House Laboratory Independent Research	01	18,978	18,508	18,508					U
3	0601153N	Defense Research Sciences	01	488,666	422,748	422,748					U
	Basic Research			648,642	542,970	542,970					
4	0602114N	Power Projection Applied Research	02	88,940	41,371	41,371					U
5	0602123N	Force Protection Applied Research	02	174,447	158,745	158,745					U
6	0602131M	Marine Corps Landing Force Technology	02	50,164	51,590	51,590					U
7	0602235N	Common Picture Applied Research	02	42,973	41,185	41,185					U
8	0602236N	Warfighter Sustainment Applied Research	02	44,092	45,467	45,467					U
9	0602271N	Electromagnetic Systems Applied Research	02	116,362	118,941	118,941					U
10	0602435N	Ocean Warfighting Environment Applied Research	02	69,703	42,618	42,618					U
11	0602651M	Joint Non-Lethal Weapons Applied Research	02	5,956	6,327	6,327					U
12	0602747N	Undersea Warfare Applied Research	02	151,844	126,313	126,313					U
13	0602750N	Future Naval Capabilities Applied Research	02	172,511	165,103	165,103					U
14	0602782N	Mine and Expeditionary Warfare Applied Research	02	34,583	33,916	33,916					U
15	0602792N	Innovative Naval Prototypes (INP) Applied Research	02								U

Department of the Navy
FY 2018 President's Budget Request
Exhibit R-1 FY 2018 President's Budget Request
Total Obligational Authority
(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Sec
1	0601103N	University Research Initiatives	01	101,714	101,714		101,714	118,130		118,130	U
2	0601152N	In-House Laboratory Independent Research	01	18,508	18,508		18,508	19,438		19,438	U
3	0601153N	Defense Research Sciences	01	422,748	422,748		422,748	458,333		458,333	U
	Basic	Research		542,970	542,970		542,970	595,901		595,901	
4	0602114N	Power Projection Applied Research	02	41,371	41,371		41,371	13,553		13,553	U
5	0602123N	Force Protection Applied Research	02	158,745	158,745		158,745	125,557		125,557	U
6	0602131M	Marine Corps Landing Force Technology	02	51,590	51,590		51,590	53,936		53,936	U
7	0602235N	Common Picture Applied Research	02	41,185	41,185		41,185	36,450		36,450	U
8	0602236N	Warfighter Sustainment Applied Research	02	45,467	45,467		45,467	48,649		48,649	U
9	0602271N	Electromagnetic Systems Applied Research	02	118,941	118,941		118,941	79,598		79,598	U
10	0602435N	Ocean Warfighting Environment Applied Research	02	42,618	42,618		42,618	42,411		42,411	U
11	0602651M	Joint Non-Lethal Weapons Applied Research	02	6,327	6,327		6,327	6,425		6,425	U
12	0602747N	Undersea Warfare Applied Research	02	126,313	126,313		126,313	56,094		56,094	U
13	0602750N	Future Naval Capabilities Applied Research	02	165,103	165,103		165,103	156,805		156,805	U
14	0602782N	Mine and Expeditionary Warfare Applied Research	02	33,916	33,916		33,916	32,733		32,733	U
15	0602792N	Innovative Naval Prototypes (INP) Applied Research	02					171,146		171,146	U

Department of the Navy
FY 2018 President's Budget Request
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Total Obligational Authority
(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO	Sec
16	0602861N	Science and Technology Management - ONR Field Acitivities	02								U
17	0602898N	Science and Technology Management - ONR Headquarters	02		29,575	29,575					U
	Applied Research			951,575	861,151	861,151					
18	0603114N	Power Projection Advanced Technology	03	41,957	96,406	96,406					U
19	0603123N	Force Protection Advanced Technology	03	42,333	48,438	48,438					U
20	0603271N	Electromagnetic Systems Advanced Technology	03	32,924	26,421	26,421					U
21	0603640M	USMC Advanced Technology Demonstration (ATD)	03	128,386	140,416	140,416					U
22	0603651M	Joint Non-Lethal Weapons Technology Development	03	12,374	13,117	13,117					U
23	0603673N	Future Naval Capabilities Advanced Technology Development	03	251,173	249,092	249,092					U
24	0603680N	Manufacturing Technology Program	03	54,739	56,712	56,712					U
25	0603729N	Warfighter Protection Advanced Technology	03	34,894	4,789	4,789					U
26	0603747N	Undersea Warfare Advanced Technology	03	13,251	25,880	25,880					U
27	0603758N	Navy Warfighting Experiments and Demonstrations	03	65,553	60,550	60,550					U
28	0603782N	Mine and Expeditionary Warfare Advanced Technology	03	3,349	15,167	15,167					U

Department of the Navy
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(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

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16	0602861N	Science and Technology Management - ONR Field Acitivities	02					62,722		62,722	U
17	0602898N	Science and Technology Management - ONR Headquarters	02	29,575	29,575		29,575				U
	Applied Research			861,151	861,151		861,151	886,079		886,079	
18	0603114N	Power Projection Advanced Technology	03	96,406	96,406		96,406				U
19	0603123N	Force Protection Advanced Technology	03	48,438	48,438		48,438	26,342		26,342	U
20	0603271N	Electromagnetic Systems Advanced Technology	03	26,421	26,421		26,421	9,360		9,360	U
21	0603640M	USMC Advanced Technology Demonstration (ATD)	03	140,416	140,416		140,416	154,407		154,407	U
22	0603651M	Joint Non-Lethal Weapons Technology Development	03	13,117	13,117		13,117	13,448		13,448	U
23	0603673N	Future Naval Capabilities Advanced Technology Development	03	249,092	249,092		249,092	231,772		231,772	U
24	0603680N	Manufacturing Technology Program	03	56,712	56,712		56,712	57,797		57,797	U
25	0603729N	Warfighter Protection Advanced Technology	03	4,789	4,789		4,789	4,878		4,878	U
26	0603747N	Undersea Warfare Advanced Technology	03	25,880	25,880		25,880				U
27	0603758N	Navy Warfighting Experiments and Demonstrations	03	60,550	60,550		60,550	64,889		64,889	U
28	0603782N	Mine and Expeditionary Warfare Advanced Technology	03	15,167	15,167		15,167	15,164		15,164	U

Department of the Navy
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Total Obligational Authority
(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO	Sec
29	0603801N	Innovative Naval Prototypes (INP) Advanced Technology Development	03								U
		Advanced Technology Development		680,933	736,988	736,988					
30	0603207N	Air/Ocean Tactical Applications	04	37,126	48,536	48,536					U
31	0603216N	Aviation Survivability	04	5,343	5,239	5,239					U
32	0603237N	Deployable Joint Command and Control	04	3,051							U
33	0603251N	Aircraft Systems	04	25,763	1,519	1,519					U
34	0603254N	ASW Systems Development	04	5,455	7,041	7,041					U
35	0603261N	Tactical Airborne Reconnaissance	04	8,391	3,274	3,274					U
36	0603382N	Advanced Combat Systems Technology	04	1,572	57,034	57,034					U
37	0603502N	Surface and Shallow Water Mine Countermeasures	04	88,092	165,775	165,775					U
38	0603506N	Surface Ship Torpedo Defense	04	69,803	87,066	87,066					U
39	0603512N	Carrier Systems Development	04	8,213	7,605	7,605					U
40	0603525N	PILOT FISH	04	124,194	132,068	132,068					U
41	0603527N	RETRACT LARCH	04	39,475	14,546	14,546	3,907	35,907		35,907	U
42	0603536N	RETRACT JUNIPER	04	109,786	115,435	115,435					U
43	0603542N	Radiological Control	04	709	702	702					U
44	0603553N	Surface ASW	04	1,056	1,081	1,081					U
45	0603561N	Advanced Submarine System Development	04	85,496	100,565	106,365					U

Department of the Navy
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29	0603801N	Innovative Naval Prototypes (INP) Advanced Technology Development	03					108,285		108,285	U
		Advanced Technology Development		736,988	736,988		736,988	686,342		686,342	
30	0603207N	Air/Ocean Tactical Applications	04	48,536	48,536		48,536	48,365		48,365	U
31	0603216N	Aviation Survivability	04	5,239	5,239		5,239	5,566		5,566	U
32	0603237N	Deployable Joint Command and Control	04								U
33	0603251N	Aircraft Systems	04	1,519	1,519		1,519	695		695	U
34	0603254N	ASW Systems Development	04	7,041	7,041		7,041	7,661		7,661	U
35	0603261N	Tactical Airborne Reconnaissance	04	3,274	3,274		3,274	3,707		3,707	U
36	0603382N	Advanced Combat Systems Technology	04	57,034	57,034		57,034	61,381		61,381	U
37	0603502N	Surface and Shallow Water Mine Countermeasures	04	165,775	165,775		165,775	154,117		154,117	U
38	0603506N	Surface Ship Torpedo Defense	04	87,066	87,066		87,066	14,974		14,974	U
39	0603512N	Carrier Systems Development	04	7,605	7,605		7,605	9,296		9,296	U
40	0603525N	PILOT FISH	04	132,068	132,068		132,068	132,083		132,083	U
41	0603527N	RETRACT LARCH	04	18,453	50,453		50,453	15,407	22,000	37,407	U
42	0603536N	RETRACT JUNIPER	04	115,435	115,435		115,435	122,413		122,413	U
43	0603542N	Radiological Control	04	702	702		702	745		745	U
44	0603553N	Surface ASW	04	1,081	1,081		1,081	1,136		1,136	U
45	0603561N	Advanced Submarine System Development	04	100,565	106,365		106,365	100,955		100,955	U

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46	0603562N	Submarine Tactical Warfare Systems	04	10,172	8,782	8,782					U
47	0603563N	Ship Concept Advanced Design	04	10,446	14,590	14,590					U
48	0603564N	Ship Preliminary Design & Feasibility Studies	04	3,213	15,805	15,805					U
49	0603570N	Advanced Nuclear Power Systems	04	482,040	453,313	453,313					U
50	0603573N	Advanced Surface Machinery Systems	04	23,443	36,655	36,655					U
51	0603576N	CHALK EAGLE	04	493,472	367,016	367,016					U
52	0603581N	Littoral Combat Ship (LCS)	04	109,426	51,630	51,630					U
53	0603582N	Combat System Integration	04	32,020	23,530	26,530					U
54	0603595N	Ohio Replacement	04	947,783	700,811	700,811					U
55	0603596N	LCS Mission Modules	04	188,872	160,058	160,058					U
56	0603597N	Automated Test and Analysis	04	22,188							U
57	0603599N	Frigate Development	04	18,965	84,900	84,900					U
58	0603609N	Conventional Munitions	04	7,676	8,342	8,342					U
59	0603611M	Marine Corps Assault Vehicles	04	196,991	158,682	158,682					U
60	0603635M	Marine Corps Ground Combat/Support System	04	359	1,303	1,303					U
61	0603654N	Joint Service Explosive Ordnance Development	04	14,957	46,911	46,911		3,500		3,500	U
62	0603658N	Cooperative Engagement	04	72,472							U
63	0603713N	Ocean Engineering Technology Development	04	5,135	4,556	4,556					U

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46	0603562N	Submarine Tactical Warfare Systems	04	8,782	8,782		8,782	13,834		13,834	U
47	0603563N	Ship Concept Advanced Design	04	14,590	14,590		14,590	36,891		36,891	U
48	0603564N	Ship Preliminary Design & Feasibility Studies	04	15,805	15,805		15,805	12,012		12,012	U
49	0603570N	Advanced Nuclear Power Systems	04	453,313	453,313		453,313	329,500		329,500	U
50	0603573N	Advanced Surface Machinery Systems	04	36,655	36,655		36,655	29,953		29,953	U
51	0603576N	CHALK EAGLE	04	367,016	367,016		367,016	191,610		191,610	U
52	0603581N	Littoral Combat Ship (LCS)	04	51,630	51,630		51,630	40,991		40,991	U
53	0603582N	Combat System Integration	04	23,530	26,530		26,530	24,674		24,674	U
54	0603595N	Ohio Replacement	04	700,811	700,811		700,811	776,158		776,158	U
55	0603596N	LCS Mission Modules	04	160,058	160,058		160,058	116,871		116,871	U
56	0603597N	Automated Test and Analysis	04					8,052		8,052	U
57	0603599N	Frigate Development	04	84,900	84,900		84,900	143,450		143,450	U
58	0603609N	Conventional Munitions	04	8,342	8,342		8,342	8,909		8,909	U
59	0603611M	Marine Corps Assault Vehicles	04	158,682	158,682		158,682				U
60	0603635M	Marine Corps Ground Combat/Support System	04	1,303	1,303		1,303	1,428		1,428	U
61	0603654N	Joint Service Explosive Ordnance Development	04	46,911	50,411		50,411	53,367		53,367	U
62	0603658N	Cooperative Engagement	04								U
63	0603713N	Ocean Engineering Technology Development	04	4,556	4,556		4,556	8,212		8,212	U

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64	0603721N	Environmental Protection	04	19,286	20,343	20,343					U
65	0603724N	Navy Energy Program	04	54,911	52,479	27,479					U
66	0603725N	Facilities Improvement	04	3,726	5,458	5,458					U
67	0603734N	CHALK CORAL	04	168,960	245,860	245,860					U
68	0603739N	Navy Logistic Productivity	04	3,728	3,089	3,089					U
69	0603746N	RETRACT MAPLE	04	340,897	323,526	323,526					U
70	0603748N	LINK PLUMERIA	04	192,336	318,497	318,497					U
71	0603751N	RETRACT ELM	04	36,086	52,834	52,834					U
72	0603764N	LINK EVERGREEN	04	45,603	48,116	48,116					U
73	0603787N	Special Processes	04	16,769	13,619	13,619					U
74	0603790N	NATO Research and Development	04	8,320	9,867	9,867					U
75	0603795N	Land Attack Technology	04	887	6,015	6,015					U
76	0603851M	Joint Non-Lethal Weapons Testing	04	27,976	27,904	27,904					U
77	0603860N	Joint Precision Approach and Landing Systems - Dem/Val	04	80,313	104,144	104,144					U
78	0603925N	Directed Energy and Electric Weapon Systems	04	41,355	32,700	32,700					U
79	0604112N	Gerald R. Ford Class Nuclear Aircraft Carrier (CVN 78 - 80)	04	95,408	70,528	70,528					U
80	0604122N	Remote Minehunting System (RMS)	04	16,940	3,001	3,001					U
81	0604272N	Tactical Air Directional Infrared Countermeasures (TADIRCM)	04	18,963	34,920	34,920	37,990	37,990		37,990	U

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64	0603721N	Environmental Protection	04	20,343	20,343		20,343	20,214		20,214	U
65	0603724N	Navy Energy Program	04	52,479	27,479		27,479	50,623		50,623	U
66	0603725N	Facilities Improvement	04	5,458	5,458		5,458	2,837		2,837	U
67	0603734N	CHALK CORAL	04	245,860	245,860		245,860	245,143		245,143	U
68	0603739N	Navy Logistic Productivity	04	3,089	3,089		3,089	2,995		2,995	U
69	0603746N	RETRACT MAPLE	04	323,526	323,526		323,526	306,101		306,101	U
70	0603748N	LINK PLUMERIA	04	318,497	318,497		318,497	253,675		253,675	U
71	0603751N	RETRACT ELM	04	52,834	52,834		52,834	55,691		55,691	U
72	0603764N	LINK EVERGREEN	04	48,116	48,116		48,116	48,982		48,982	U
73	0603787N	Special Processes	04	13,619	13,619		13,619				U
74	0603790N	NATO Research and Development	04	9,867	9,867		9,867	9,099		9,099	U
75	0603795N	Land Attack Technology	04	6,015	6,015		6,015	33,568		33,568	U
76	0603851M	Joint Non-Lethal Weapons Testing	04	27,904	27,904		27,904	29,873		29,873	U
77	0603860N	Joint Precision Approach and Landing Systems - Dem/Val	04	104,144	104,144		104,144	106,391		106,391	U
78	0603925N	Directed Energy and Electric Weapon Systems	04	32,700	32,700		32,700	107,310		107,310	U
79	0604112N	Gerald R. Ford Class Nuclear Aircraft Carrier (CVN 78 - 80)	04	70,528	70,528		70,528	83,935		83,935	U
80	0604122N	Remote Minehunting System (RMS)	04	3,001	3,001		3,001				U
81	0604272N	Tactical Air Directional Infrared Countermeasures (TADIRCM)	04	72,910	72,910		72,910	46,844	5,710	52,554	U

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82	0604279N	ASE Self-Protection Optimization	04	8,995							U
83	0604286M	Marine Corps Additive Manufacturing Technology Development	04								U
84	0604292N	MH-XX	04	4,462	1,620	1,620					U
85	0604320M	Rapid Technology Capability Prototype	04								U
86	0604454N	LX (R)	04	73,392	6,354	6,354					U
87	0604536N	Advanced Undersea Prototyping	04		78,589	78,589					U
88	0604653N	Joint Counter Radio Controlled IED Electronic Warfare (JCREW)	04	3,765							U
89	0604659N	Precision Strike Weapons Development Program	04	7,621	9,910	9,910					U
90	0604707N	Space and Electronic Warfare (SEW) Architecture/Engineering Support	04	22,214	23,971	23,971					U
91	0604786N	Offensive Anti-Surface Warfare Weapon Development	04	348,708	252,409	313,109					U
92	0605812M	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	04	24,790	23,197	23,197					U
93	0303354N	ASW Systems Development - MIP	04	9,835	9,110	9,110					U
94	0304240M	Advanced Tactical Unmanned Aircraft System	04								U
95	0304270N	Electronic Warfare Development - MIP	04	580	437	437					U
		Advanced Component Development & Prototypes		4,929,981	4,662,867	4,707,367	41,897	77,397		77,397	
96	0603208N	Training System Aircraft	05	16,438	19,938	19,938					U

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82	0604279N	ASE Self-Protection Optimization	04								U
83	0604286M	Marine Corps Additive Manufacturing Technology Development	04					6,200		6,200	U
84	0604292N	MH-XX	04	1,620	1,620		1,620				U
85	0604320M	Rapid Technology Capability Prototype	04					7,055		7,055	U
86	0604454N	LX (R)	04	6,354	6,354		6,354	9,578		9,578	U
87	0604536N	Advanced Undersea Prototyping	04	78,589	78,589		78,589	66,543		66,543	U
88	0604653N	Joint Counter Radio Controlled IED Electronic Warfare (JCREW)	04								U
89	0604659N	Precision Strike Weapons Development Program	04	9,910	9,910		9,910	31,315		31,315	U
90	0604707N	Space and Electronic Warfare (SEW) Architecture/Engineering Support	04	23,971	23,971		23,971	42,851		42,851	U
91	0604786N	Offensive Anti-Surface Warfare Weapon Development	04	252,409	313,109		313,109	160,694		160,694	U
92	0605812M	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	04	23,197	23,197		23,197				U
93	0303354N	ASW Systems Development - MIP	04	9,110	9,110		9,110	8,278		8,278	U
94	0304240M	Advanced Tactical Unmanned Aircraft System	04					7,979		7,979	U
95	0304270N	Electronic Warfare Development - MIP	04	437	437		437	527		527	U
		Advanced Component Development & Prototypes		4,704,764	4,784,764		4,784,764	4,218,714	27,710	4,246,424	
96	0603208N	Training System Aircraft	05	19,938	19,938		19,938	16,945		16,945	U

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97	0604212N	Other Helo Development	05	12,070	6,268	6,268					U
98	0604214N	AV-8B Aircraft - Eng Dev	05	26,939	33,664	34,902					U
99	0604215N	Standards Development	05	48,677	1,300	1,300					U
100	0604216N	Multi-Mission Helicopter Upgrade Development	05	17,518	5,275	5,275					U
101	0604218N	Air/Ocean Equipment Engineering	05	4,406	3,875	3,875					U
102	0604221N	P-3 Modernization Program	05	1,485	1,909	1,909					U
103	0604230N	Warfare Support System	05	5,740	13,237	13,237					U
104	0604231N	Tactical Command System	05	75,508	36,323	40,323					U
105	0604234N	Advanced Hawkeye	05	211,146	363,792	363,792					U
106	0604245N	H-1 Upgrades	05	26,768	27,441	27,441					U
107	0604261N	Acoustic Search Sensors	05	30,637	34,525	34,525					U
108	0604262N	V-22A	05	74,366	174,423	189,423					U
109	0604264N	Air Crew Systems Development	05	10,201	13,577	13,577					U
110	0604269N	EA-18	05	45,384	116,761	116,761					U
111	0604270N	Electronic Warfare Development	05	22,383	48,766	92,766					U
112	0604273N	Executive Helo Development	05	490,768	338,357	338,357					U
113	0604274N	Next Generation Jammer (NGJ)	05	376,548	577,822	577,822					U
114	0604280N	Joint Tactical Radio System - Navy (JTRS-Navy)	05	24,300	2,365	2,365					U
115	0604282N	Next Generation Jammer (NGJ) Increment II	05	12,306	52,065	52,065					U

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97	0604212N	Other Helo Development	05	6,268	6,268		6,268	26,786		26,786	U
98	0604214N	AV-8B Aircraft - Eng Dev	05	33,664	34,902		34,902	48,780		48,780	U
99	0604215N	Standards Development	05	1,300	1,300		1,300	2,722		2,722	U
100	0604216N	Multi-Mission Helicopter Upgrade Development	05	5,275	5,275		5,275	5,371		5,371	U
101	0604218N	Air/Ocean Equipment Engineering	05	3,875	3,875		3,875	782		782	U
102	0604221N	P-3 Modernization Program	05	1,909	1,909		1,909	1,361		1,361	U
103	0604230N	Warfare Support System	05	13,237	13,237		13,237	14,167		14,167	U
104	0604231N	Tactical Command System	05	36,323	40,323		40,323	55,695		55,695	U
105	0604234N	Advanced Hawkeye	05	363,792	363,792		363,792	292,535		292,535	U
106	0604245N	H-1 Upgrades	05	27,441	27,441		27,441	61,288		61,288	U
107	0604261N	Acoustic Search Sensors	05	34,525	34,525		34,525	37,167		37,167	U
108	0604262N	V-22A	05	174,423	189,423		189,423	171,386		171,386	U
109	0604264N	Air Crew Systems Development	05	13,577	13,577		13,577	13,235		13,235	U
110	0604269N	EA-18	05	116,761	116,761		116,761	173,488		173,488	U
111	0604270N	Electronic Warfare Development	05	48,766	92,766		92,766	54,055		54,055	U
112	0604273N	Executive Helo Development	05	338,357	338,357		338,357	451,938		451,938	U
113	0604274N	Next Generation Jammer (NGJ)	05	577,822	577,822		577,822	632,936		632,936	U
114	0604280N	Joint Tactical Radio System - Navy (JTRS-Navy)	05	2,365	2,365		2,365	4,310		4,310	U
115	0604282N	Next Generation Jammer (NGJ) Increment II	05	52,065	52,065		52,065	66,686		66,686	U

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116	0604307N	Surface Combatant Combat System Engineering	05	430,450	282,764	282,764					U
117	0604311N	LPD-17 Class Systems Integration	05	730	580	580					U
118	0604329N	Small Diameter Bomb (SDB)	05	55,818	97,622	97,622					U
119	0604366N	Standard Missile Improvements	05	111,295	120,561	120,561					U
120	0604373N	Airborne MCM	05	9,399	45,622	45,622					U
121	0604376M	Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) for Aviation	05	3,281							U
122	0604378N	Naval Integrated Fire Control - Counter Air Systems Engineering	05	22,960	25,750	25,750					U
123	0604404N	Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) System	05	414,376							U
124	0604501N	Advanced Above Water Sensors	05	42,796	85,868	85,868					U
125	0604503N	SSN-688 and Trident Modernization	05	106,342	117,476	117,476					U
126	0604504N	Air Control	05	55,947	47,404	47,404					U
127	0604512N	Shipboard Aviation Systems	05	117,401	112,158	112,158					U
128	0604518N	Combat Information Center Conversion	05		6,283	6,283					U
129	0604522N	Air and Missile Defense Radar (AMDR) System	05	227,051	144,395	144,395					U
130	0604558N	New Design SSN	05	150,442	113,013	113,013					U
131	0604562N	Submarine Tactical Warfare System	05	51,054	43,160	43,160					U
132	0604567N	Ship Contract Design/ Live Fire T&E	05	38,060	65,002	63,311					U

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116	0604307N	Surface Combatant Combat System Engineering	05	282,764	282,764		282,764	390,238		390,238	U
117	0604311N	LPD-17 Class Systems Integration	05	580	580		580	689		689	U
118	0604329N	Small Diameter Bomb (SDB)	05	97,622	97,622		97,622	112,846		112,846	U
119	0604366N	Standard Missile Improvements	05	120,561	120,561		120,561	158,578		158,578	U
120	0604373N	Airborne MCM	05	45,622	45,622		45,622	15,734		15,734	U
121	0604376M	Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) for Aviation	05								U
122	0604378N	Naval Integrated Fire Control - Counter Air Systems Engineering	05	25,750	25,750		25,750	25,445		25,445	U
123	0604404N	Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) System	05								U
124	0604501N	Advanced Above Water Sensors	05	85,868	85,868		85,868	87,233		87,233	U
125	0604503N	SSN-688 and Trident Modernization	05	117,476	117,476		117,476	130,981		130,981	U
126	0604504N	Air Control	05	47,404	47,404		47,404	75,186		75,186	U
127	0604512N	Shipboard Aviation Systems	05	112,158	112,158		112,158	177,926		177,926	U
128	0604518N	Combat Information Center Conversion	05	6,283	6,283		6,283	8,062		8,062	U
129	0604522N	Air and Missile Defense Radar (AMDR) System	05	144,395	144,395		144,395	32,090		32,090	U
130	0604558N	New Design SSN	05	113,013	113,013		113,013	120,087		120,087	U
131	0604562N	Submarine Tactical Warfare System	05	43,160	43,160		43,160	50,850		50,850	U
132	0604567N	Ship Contract Design/ Live Fire T&E	05	65,002	63,311		63,311	67,166		67,166	U

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133	0604574N	Navy Tactical Computer Resources	05	4,053	3,098	3,098					U
134	0604580N	Virginia Payload Module (VPM)	05	162,168	97,920	97,920					U
135	0604601N	Mine Development	05	12,602	10,490	15,290					U
136	0604610N	Lightweight Torpedo Development	05	42,548	20,178	20,178					U
137	0604654N	Joint Service Explosive Ordnance Development	05	8,123	7,369	7,369					U
138	0604703N	Personnel, Training, Simulation, and Human Factors	05	7,408	4,995	18,995					U
139	0604727N	Joint Standoff Weapon Systems	05	394	412	412					U
140	0604755N	Ship Self Defense (Detect & Control)	05	145,229	134,619	134,619					U
141	0604756N	Ship Self Defense (Engage: Hard Kill)	05	93,481	114,475	114,475					U
142	0604757N	Ship Self Defense (Engage: Soft Kill/EW)	05	100,153	114,211	114,211					U
143	0604761N	Intelligence Engineering	05	2,053	11,029	13,029					U
144	0604771N	Medical Development	05	24,658	9,220	9,221					U
145	0604777N	Navigation/ID System	05	32,339	42,723	42,723					U
146	0604800M	Joint Strike Fighter (JSF) - EMD	05	526,247	531,426	531,426					U
147	0604800N	Joint Strike Fighter (JSF) - EMD	05	488,703	528,716	528,716					U
148	0604810M	Joint Strike Fighter Follow On Modernization (FoM) - Marine Corps	05	20,157	74,227	74,227					U
149	0604810N	Joint Strike Fighter Follow On Modernization (FoM) - Navy	05	20,544	63,387	63,387					U

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133	0604574N	Navy Tactical Computer Resources	05	3,098	3,098		3,098	4,817		4,817	U
134	0604580N	Virginia Payload Module (VPM)	05	97,920	97,920		97,920	72,861		72,861	U
135	0604601N	Mine Development	05	10,490	15,290		15,290	25,635		25,635	U
136	0604610N	Lightweight Torpedo Development	05	20,178	20,178		20,178	28,076		28,076	U
137	0604654N	Joint Service Explosive Ordnance Development	05	7,369	7,369		7,369	7,561		7,561	U
138	0604703N	Personnel, Training, Simulation, and Human Factors	05	4,995	18,995		18,995	40,828		40,828	U
139	0604727N	Joint Standoff Weapon Systems	05	412	412		412	435		435	U
140	0604755N	Ship Self Defense (Detect & Control)	05	134,619	134,619		134,619	161,713		161,713	U
141	0604756N	Ship Self Defense (Engage: Hard Kill)	05	114,475	114,475		114,475	212,412		212,412	U
142	0604757N	Ship Self Defense (Engage: Soft Kill/EW)	05	114,211	114,211		114,211	103,391		103,391	U
143	0604761N	Intelligence Engineering	05	11,029	13,029		13,029	34,855		34,855	U
144	0604771N	Medical Development	05	9,220	9,221		9,221	9,353		9,353	U
145	0604777N	Navigation/ID System	05	42,723	42,723		42,723	92,546		92,546	U
146	0604800M	Joint Strike Fighter (JSF) - EMD	05	531,426	531,426		531,426	152,934		152,934	U
147	0604800N	Joint Strike Fighter (JSF) - EMD	05	528,716	528,716		528,716	108,931		108,931	U
148	0604810M	Joint Strike Fighter Follow On Modernization (FoM) - Marine Corps	05	74,227	74,227		74,227	144,958		144,958	U
149	0604810N	Joint Strike Fighter Follow On Modernization (FoM) - Navy	05	63,387	63,387		63,387	143,855		143,855	U

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150	0605013M	Information Technology Development	05	3,915	4,856	4,856					U
151	0605013N	Information Technology Development	05	77,895	97,066	97,066					U
152	0605024N	Anti-Tamper Technology Support	05		2,500	2,500					U
153	0605212N	CH-53K RDTE	05	563,174	404,810	404,810					U
154	0605215N	Mission Planning	05		33,570	33,570					U
155	0605217N	Common Avionics	05		51,599	54,599					U
156	0605220N	Ship to Shore Connector (SSC)	05	7,734	11,088	11,088					U
157	0605327N	T-AO 205 Class	05		1,095	1,095					U
158	0605414N	Unmanned Carrier Aviation (UCA)	05		89,000	89,000					U
159	0605450N	Joint Air-to-Ground Missile (JAGM)	05	25,640	17,880	17,880					U
160	0605500N	Multi-mission Maritime Aircraft (MMA)	05	151,472	59,126	59,126					U
161	0605504N	Multi-Mission Maritime (MMA) Increment III	05	89,686	182,220	182,220					U
162	0605611M	Marine Corps Assault Vehicles System Development & Demonstration	05								U
163	0605813M	Joint Light Tactical Vehicle (JLTV) System Development & Demonstration	05								U
164	0204202N	DDG-1000	05	101,724	45,642	45,642					U
165	0303167N	Pre-Auction Spectrum Relocation***	05	131							U
166	0303267N	Auctioned Spectrum Relocation Fund***	05	108,490							U
167	0304231N	Tactical Command System - MIP	05	998	676	676					U

***Funding in this line item was transferred during the year of execution from the Spectrum Relocation Fund (SRF) in support of the Advanced Wireless Services 3 (AWS-3) auction and is associated with the reallocation or sharing of the 1755-1780 MHz and 1695-1710 MHz bands. The SRF is administered by the Office of Management and Budget (OMB), which approves SRF transfers to federal agencies on an annual basis in consultation with the National Telecommunications and Information Administration (NTIA).

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150	0605013M	Information Technology Development	05	4,856	4,856		4,856	14,865		14,865	U
151	0605013N	Information Technology Development	05	97,066	97,066		97,066	152,977		152,977	U
152	0605024N	Anti-Tamper Technology Support	05	2,500	2,500		2,500	3,410		3,410	U
153	0605212N	CH-53K RDTE	05	404,810	404,810		404,810	340,758		340,758	U
154	0605215N	Mission Planning	05	33,570	33,570		33,570	33,430		33,430	U
155	0605217N	Common Avionics	05	51,599	54,599		54,599	58,163		58,163	U
156	0605220N	Ship to Shore Connector (SSC)	05	11,088	11,088		11,088	22,410		22,410	U
157	0605327N	T-AO 205 Class	05	1,095	1,095		1,095	1,961		1,961	U
158	0605414N	Unmanned Carrier Aviation (UCA)	05	89,000	89,000		89,000	222,208		222,208	U
159	0605450N	Joint Air-to-Ground Missile (JAGM)	05	17,880	17,880		17,880	15,473		15,473	U
160	0605500N	Multi-mission Maritime Aircraft (MMA)	05	59,126	59,126		59,126	11,795		11,795	U
161	0605504N	Multi-Mission Maritime (MMA) Increment III	05	182,220	182,220		182,220	181,731		181,731	U
162	0605611M	Marine Corps Assault Vehicles System Development & Demonstration	05					178,993		178,993	U
163	0605813M	Joint Light Tactical Vehicle (JLTV) System Development & Demonstration	05					20,710		20,710	U
164	0204202N	DDG-1000	05	45,642	45,642		45,642	140,500		140,500	U
165	0303167N	Pre-Auction Spectrum Relocation***	05								U
166	0303267N	Auctioned Spectrum Relocation Fund***	05								U
167	0304231N	Tactical Command System - MIP	05	676	676		676				U

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168	0304785N	Tactical Cryptologic Systems	05	17,785	36,747	36,747					U
169	0305124N	Special Applications Program	05	26,505	35,002	35,002					U
170	0306250M	Cyber Operations Technology Development	05		4,942	4,942					U
		System Development & Demonstration		6,236,999	6,025,655	6,112,003					
171	0604256N	Threat Simulator Development	06	30,323	16,633	16,633					U
172	0604258N	Target Systems Development	06	58,730	36,662	36,662					U
173	0604759N	Major T&E Investment	06	66,538	42,109	42,109					U
174	0605126N	Joint Theater Air and Missile Defense Organization	06	6,799	2,998	2,998					U
175	0605152N	Studies and Analysis Support - Navy	06	4,141	3,931	3,931					U
176	0605154N	Center for Naval Analyses	06	45,558	46,634	46,634					U
177	0605285N	Next Generation Fighter	06	5,909	1,200	1,200					U
178	0605502N	Small Business Innovative Research	06	384,569							U
179	0605804N	Technical Information Services	06	1,328	903	903					U
180	0605853N	Management, Technical & International Support	06	77,073	87,077	87,077					U
181	0605856N	Strategic Technical Support	06	3,140	3,597	3,597					U
182	0605861N	RDT&E Science and Technology Management	06	76,872	62,811	63,000					U
183	0605863N	RDT&E Ship and Aircraft Support	06	128,715	106,093	106,093					U
184	0605864N	Test and Evaluation Support	06	351,469	349,146	413,446					U

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168	0304785N	Tactical Cryptologic Systems	05	36,747	36,747		36,747	28,311		28,311	U
169	0305124N	Special Applications Program	05	35,002	35,002		35,002				U
170	0306250M	Cyber Operations Technology Development	05	4,942	4,942		4,942	4,502		4,502	U
		System Development & Demonstration		6,025,655	6,112,003		6,112,003	6,362,102		6,362,102	
171	0604256N	Threat Simulator Development	06	16,633	16,633		16,633	91,819		91,819	U
172	0604258N	Target Systems Development	06	36,662	36,662		36,662	23,053		23,053	U
173	0604759N	Major T&E Investment	06	42,109	42,109		42,109	52,634		52,634	U
174	0605126N	Joint Theater Air and Missile Defense Organization	06	2,998	2,998		2,998	141		141	U
175	0605152N	Studies and Analysis Support - Navy	06	3,931	3,931		3,931	3,917		3,917	U
176	0605154N	Center for Naval Analyses	06	46,634	46,634		46,634	50,432		50,432	U
177	0605285N	Next Generation Fighter	06	1,200	1,200		1,200				U
178	0605502N	Small Business Innovative Research	06								U
179	0605804N	Technical Information Services	06	903	903		903	782		782	U
180	0605853N	Management, Technical & International Support	06	87,077	87,077		87,077	94,562		94,562	U
181	0605856N	Strategic Technical Support	06	3,597	3,597		3,597	4,313		4,313	U
182	0605861N	RDT&E Science and Technology Management	06	62,811	63,000		63,000	1,104		1,104	U
183	0605863N	RDT&E Ship and Aircraft Support	06	106,093	106,093		106,093	105,666		105,666	U
184	0605864N	Test and Evaluation Support	06	349,146	413,446		413,446	373,667		373,667	U

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185	0605865N	Operational Test and Evaluation Capability	06	17,796	18,160	18,199					U
186	0605866N	Navy Space and Electronic Warfare (SEW) Support	06	6,316	9,658	9,658					U
187	0605867N	SEW Surveillance/Reconnaissance Support	06	6,519	6,500	6,500					U
188	0605873M	Marine Corps Program Wide Support	06	14,129	22,247	22,247					U
189	0605898N	Management HQ - R&D	06		16,254	16,312					U
190	0606355N	Warfare Innovation Management	06		21,123	21,123					U
191	0902498N	Management Headquarters (Departmental Support Activities)	06								U
192	0909980N	Judgment Fund Reimbursement	06	398							U
193	0909999N	Financing for Cancelled Account Adjustments	06	171							U
194	1206867N	SEW Surveillance/Reconnaissance Support	06								U
		Management Support		1,286,493	853,736	918,322					
196	0607658N	Cooperative Engagement Capability (CEC)	07		84,501	84,501					U
197	0607700N	Deployable Joint Command and Control	07		2,970	2,970					U
198	0101221N	Strategic Sub & Weapons System Support	07	96,078	136,556	136,556					U
199	0101224N	SSBN Security Technology Program	07	45,166	33,845	33,845					U
200	0101226N	Submarine Acoustic Warfare Development	07	4,658	9,329	9,329					U

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185	0605865N	Operational Test and Evaluation Capability	06	18,160	18,199		18,199	20,298		20,298	U
186	0605866N	Navy Space and Electronic Warfare (SEW) Support	06	9,658	9,658		9,658	17,341		17,341	U
187	0605867N	SEW Surveillance/Reconnaissance Support	06	6,500	6,500		6,500				U
188	0605873M	Marine Corps Program Wide Support	06	22,247	22,247		22,247	21,751		21,751	U
189	0605898N	Management HQ - R&D	06	16,254	16,312		16,312	44,279		44,279	U
190	0606355N	Warfare Innovation Management	06	21,123	21,123		21,123	28,841		28,841	U
191	0902498N	Management Headquarters (Departmental Support Activities)	06					1,749		1,749	U
192	0909980N	Judgment Fund Reimbursement	06								U
193	0909999N	Financing for Cancelled Account Adjustments	06								U
194	1206867N	SEW Surveillance/Reconnaissance Support	06					9,408		9,408	U
		Management Support		853,736	918,322		918,322	945,757		945,757	
196	0607658N	Cooperative Engagement Capability (CEC)	07	84,501	84,501		84,501	92,571		92,571	U
197	0607700N	Deployable Joint Command and Control	07	2,970	2,970		2,970	3,137		3,137	U
198	0101221N	Strategic Sub & Weapons System Support	07	136,556	136,556		136,556	135,219		135,219	U
199	0101224N	SSBN Security Technology Program	07	33,845	33,845		33,845	36,242		36,242	U
200	0101226N	Submarine Acoustic Warfare Development	07	9,329	9,329		9,329	12,053		12,053	U

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201	0101402N	Navy Strategic Communications	07	16,121	17,218	17,218					U
202	0203761N	Rapid Technology Transition (RTT)	07	7,626							U
203	0204136N	F/A-18 Squadrons	07	132,905	189,125	189,125					U
204	0204163N	Fleet Telecommunications (Tactical)	07	39,548	48,225	48,225					U
205	0204228N	Surface Support	07	28,210	21,156	21,156					U
206	0204229N	Tomahawk and Tomahawk Mission Planning Center (TMPC)	07	26,650	71,355	91,355					U
207	0204311N	Integrated Surveillance System	07	76,204	58,542	58,542					U
208	0204413N	Amphibious Tactical Support Units (Displacement Craft)	07	11,330	13,929	13,929					U
209	0204460M	Ground/Air Task Oriented Radar (G/ ATOR)	07	61,348	83,538	83,538					U
210	0204571N	Consolidated Training Systems Development	07	32,902	38,593	38,593					U
211	0204574N	Cryptologic Direct Support	07	1,915	1,122	1,122					U
212	0204575N	Electronic Warfare (EW) Readiness Support	07	44,727	99,998	99,998					U
213	0205601N	HARM Improvement	07	28,063	48,635	48,635					U
214	0205604N	Tactical Data Links	07	138,549	124,785	124,785					U
215	0205620N	Surface ASW Combat System Integration	07	23,685	24,583	24,583					U
216	0205632N	MK-48 ADCAP	07	47,496	39,134	39,134					U
217	0205633N	Aviation Improvements	07	103,685	120,861	120,861					U

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201	0101402N	Navy Strategic Communications	07	17,218	17,218		17,218	18,221		18,221	U
202	0203761N	Rapid Technology Transition (RTT)	07								U
203	0204136N	F/A-18 Squadrons	07	189,125	189,125		189,125	224,470		224,470	U
204	0204163N	Fleet Telecommunications (Tactical)	07	48,225	48,225		48,225	33,525		33,525	U
205	0204228N	Surface Support	07	21,156	21,156		21,156	24,829		24,829	U
206	0204229N	Tomahawk and Tomahawk Mission Planning Center (TMPC)	07	71,355	91,355		91,355	133,617		133,617	U
207	0204311N	Integrated Surveillance System	07	58,542	58,542		58,542	38,972	11,600	50,572	U
208	0204413N	Amphibious Tactical Support Units (Displacement Craft)	07	13,929	13,929		13,929	3,940		3,940	U
209	0204460M	Ground/Air Task Oriented Radar (G/ ATOR)	07	83,538	83,538		83,538	54,645		54,645	U
210	0204571N	Consolidated Training Systems Development	07	38,593	38,593		38,593	66,518		66,518	U
211	0204574N	Cryptologic Direct Support	07	1,122	1,122		1,122	1,155	1,200	2,355	U
212	0204575N	Electronic Warfare (EW) Readiness Support	07	99,998	99,998		99,998	51,040		51,040	U
213	0205601N	HARM Improvement	07	48,635	48,635		48,635	87,989		87,989	U
214	0205604N	Tactical Data Links	07	124,785	124,785		124,785	89,852		89,852	U
215	0205620N	Surface ASW Combat System Integration	07	24,583	24,583		24,583	29,351		29,351	U
216	0205632N	MK-48 ADCAP	07	39,134	39,134		39,134	68,553		68,553	U
217	0205633N	Aviation Improvements	07	120,861	120,861		120,861	119,099		119,099	U

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Total Obligational Authority
(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO	Sec
218	0205675N	Operational Nuclear Power Systems	07	101,323	101,786	101,786					U
219	0206313M	Marine Corps Communications Systems	07	84,017	82,159	118,146					U
220	0206335M	Common Aviation Command and Control System (CAC2S)	07	13,959	11,850	11,850					U
221	0206623M	Marine Corps Ground Combat/ Supporting Arms Systems	07	55,058	47,877	51,835					U
222	0206624M	Marine Corps Combat Services Support	07	23,423	13,194	13,194					U
223	0206625M	USMC Intelligence/Electronic Warfare Systems (MIP)	07	13,373	17,171	24,187					U
224	0206629M	Amphibious Assault Vehicle	07	41,363	38,020	38,020					U
225	0207161N	Tactical AIM Missiles	07	59,053	56,285	56,285					U
226	0207163N	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07	30,240	40,350	40,350					U
227	0219902M	Global Combat Support System - Marine Corps (GCSS-MC)	07		9,128	9,128					U
231	0303109N	Satellite Communications (SPACE)	07	45,946	37,372	37,372					U
232	0303138N	Consolidated Afloat Network Enterprise Services (CANES)	07	21,522	23,541	23,541					U
233	0303140N	Information Systems Security Program	07	29,491	38,510	38,510					U
235	0305160N	Navy Meteorological and Ocean Sensors-Space (METOC)	07	599							U
236	0305192N	Military Intelligence Program (MIP) Activities	07	6,207	6,019	6,019					U
237	0305204N	Tactical Unmanned Aerial Vehicles	07	8,550	8,436	8,436					U

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Total Obligational Authority
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Line No	Program Element Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Sec
218	0205675N	Operational Nuclear Power Systems	07	101,786	101,786		101,786	127,445		127,445	U
219	0206313M	Marine Corps Communications Systems	07	82,159	118,146		118,146	123,825		123,825	U
220	0206335M	Common Aviation Command and Control System (CAC2S)	07	11,850	11,850		11,850	7,343		7,343	U
221	0206623M	Marine Corps Ground Combat/ Supporting Arms Systems	07	47,877	51,835		51,835	66,009		66,009	U
222	0206624M	Marine Corps Combat Services Support	07	13,194	13,194		13,194	25,258		25,258	U
223	0206625M	USMC Intelligence/Electronic Warfare Systems (MIP)	07	17,171	24,187		24,187	30,886		30,886	U
224	0206629M	Amphibious Assault Vehicle	07	38,020	38,020		38,020	58,728		58,728	U
225	0207161N	Tactical AIM Missiles	07	56,285	56,285		56,285	42,884		42,884	U
226	0207163N	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07	40,350	40,350		40,350	25,364		25,364	U
227	0219902M	Global Combat Support System - Marine Corps (GCSS-MC)	07	9,128	9,128		9,128				U
231	0303109N	Satellite Communications (SPACE)	07	37,372	37,372		37,372				U
232	0303138N	Consolidated Afloat Network Enterprise Services (CANES)	07	23,541	23,541		23,541	24,271		24,271	U
233	0303140N	Information Systems Security Program	07	38,510	38,510		38,510	50,269		50,269	U
235	0305160N	Navy Meteorological and Ocean Sensors-Space (METOC)	07								U
236	0305192N	Military Intelligence Program (MIP) Activities	07	6,019	6,019		6,019	6,352		6,352	U
237	0305204N	Tactical Unmanned Aerial Vehicles	07	8,436	8,436		8,436	7,770		7,770	U

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238	0305205N	UAS Integration and Interoperability	07	42,202	36,509	36,509					U
239	0305208M	Distributed Common Ground/Surface Systems	07	1,105	2,100	2,100					U
240	0305208N	Distributed Common Ground/Surface Systems	07	23,149	44,571	44,571					U
241	0305220N	MQ-4C Triton	07	237,118	111,729	111,729					U
242	0305231N	MQ-8 UAV	07	52,770	26,518	26,518					U
243	0305232M	RQ-11 UAV	07	635	418	418					U
244	0305233N	RQ-7 UAV	07	688	716	716					U
245	0305234N	Small (Level 0) Tactical UAS (STUASL0)	07	4,647	5,071	5,071					U
246	0305239M	RQ-21A	07	6,251	9,497	9,497					U
247	0305241N	Multi-Intelligence Sensor Development	07	39,645	77,965	77,965					U
248	0305242M	Unmanned Aerial Systems (UAS) Payloads (MIP)	07	9,246	11,181	11,181					U
249	0305421N	RQ-4 Modernization	07	119,892	181,266	181,266					U
250	0308601N	Modeling and Simulation Support	07	4,585	4,709	4,709					U
251	0702207N	Depot Maintenance (Non-IF)	07	23,401	49,322	49,322					U
252	0708730N	Maritime Technology (MARITECH)	07	4,162	3,204	3,204					U
253	1203109N	Satellite Communications (SPACE)	07								U
9999	9999999999	Classified Programs		1,527,932	1,228,460	1,265,631	36,426	128,626		128,626	U
		Operational Systems Development		3,598,418	3,592,934	3,697,066					

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Line No	Program Element Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Sec
238	0305205N	UAS Integration and Interoperability	07	36,509	36,509		36,509	39,736		39,736	U
239	0305208M	Distributed Common Ground/Surface Systems	07	2,100	2,100		2,100	12,867		12,867	U
240	0305208N	Distributed Common Ground/Surface Systems	07	44,571	44,571		44,571	46,150		46,150	U
241	0305220N	MQ-4C Triton	07	111,729	111,729		111,729	84,115		84,115	U
242	0305231N	MQ-8 UAV	07	26,518	26,518		26,518	62,656		62,656	U
243	0305232M	RQ-11 UAV	07	418	418		418	2,022		2,022	U
244	0305233N	RQ-7 UAV	07	716	716		716				U
245	0305234N	Small (Level 0) Tactical UAS (STUASL0)	07	5,071	5,071		5,071	4,835		4,835	U
246	0305239M	RQ-21A	07	9,497	9,497		9,497	8,899		8,899	U
247	0305241N	Multi-Intelligence Sensor Development	07	77,965	77,965		77,965	99,020		99,020	U
248	0305242M	Unmanned Aerial Systems (UAS) Payloads (MIP)	07	11,181	11,181		11,181	18,578		18,578	U
249	0305421N	RQ-4 Modernization	07	181,266	181,266		181,266	229,404		229,404	U
250	0308601N	Modeling and Simulation Support	07	4,709	4,709		4,709	5,238		5,238	U
251	0702207N	Depot Maintenance (Non-IF)	07	49,322	49,322		49,322	38,227		38,227	U
252	0708730N	Maritime Technology (MARITECH)	07	3,204	3,204		3,204	4,808		4,808	U
253	1203109N	Satellite Communications (SPACE)	07					37,836		37,836	U
9999	9999999999	Classified Programs		1,264,886	1,394,257		1,394,257	1,364,347	89,855	1,454,202	U
		Operational Systems Development		3,629,360	3,825,692		3,825,692	3,980,140	102,655	4,082,795	

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Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO	Sec
254	0901560N	Continuing Resolution Programs	20		800,517	800,517	-42,576	-42,576		-42,576	U
		Undistributed			800,517	800,517	-42,576	-42,576		-42,576	
Total Research, Development, Test & Eval, Navy				18,333,041	18,076,818	18,376,384	35,747	163,447		163,447	

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(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Sec
254	0901560N	Continuing Resolution Programs	20	757,941	757,941		757,941				U
		Undistributed		757,941	757,941		757,941				
Total Research, Development, Test & Eval, Navy				18,112,565	18,539,831		18,539,831	17,675,035	130,365	17,805,400	

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Non RDT&E Title
(Dollars in Thousands)

Summary Recap of Budget Activities	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO
Research and Development	36,289						
Total Research, Development, Test & Evaluation	36,289						

Summary Recap of Non-RDT&E Title FYDP Programs

Mobility Forces	36,289
Total Research, Development, Test & Evaluation	36,289

Department of the Navy
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Non RDT&E Title
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Summary Recap of Budget Activities	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Research and Development					18,622		18,622
Total Research, Development, Test & Evaluation					18,622		18,622

Summary Recap of Non-RDT&E Title FYDP Programs

Mobility Forces					18,622		18,622
Total Research, Development, Test & Evaluation					18,622		18,622

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Non RDT&E Title
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Appropriation: 4557N National Defense Sealift Fund

Line No	Program Element Number	Item	Act	FY 2016 Base + OCO	FY 2017 PB Request with CR Adj Base	FY 2017 Total PB Requests* with CR Adj Base	FY 2017 PB Request with CR Adj OCO	FY 2017 Total PB Requests* with CR Adj OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj OCO	Sec
1	0408042N	National Defense Sealift Fund	04	36,289							U
		Research and Development		36,289							
Total National Defense Sealift Fund				36,289							

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Appropriation: 4557N National Defense Sealift Fund

Line No	Program Element Number	Item	Act	FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA	FY 2017 Total PB Requests* with CR Adj Base + OCO	FY 2017 Less Enacted Div B P.L.114-254** OCO	FY 2017 Remaining Req with CR Adj Base + OCO	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Sec
1	0408042N	National Defense Sealift Fund	04					18,622		18,622	U
		Research and Development						18,622		18,622	
Total National Defense Sealift Fund								18,622		18,622	

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P-3 Modernization Program	0604221N	102	05	Volume 3 - 101
Personnel, Trng, Sim, & Human Factors	0604703N	138	05	Volume 3 - 823
Power Proj Applied Research	0602114N	4	02	Volume 1 - 93

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RQ-7 UAV	0305233N	244	07	Volume 5 - 911
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Tactical Cryptologic Systems	0304785N	168	05	Volume 3 - 1443
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Tactical Unmanned Aer Vehicles	0305204N	237	07	Volume 5 - 829
Target Systems Development	0604258N	172	06	Volume 4 - 15
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Threat Simulator Development	0604256N	171	06	Volume 4 - 1
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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0603208N *I Training System Aircraft*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	13.115	16.438	19.938	16.945	-	16.945	6.593	2.618	2.681	2.734	0.000	81.062
3367: *Training Aircraft Updates*	13.115	16.438	19.938	16.945	-	16.945	6.593	2.618	2.681	2.734	0.000	81.062

A. Mission Description and Budget Item Justification

This program element provides for design, development, integration and test of various pre-production platform improvements for Naval Undergraduate Flight Training Systems which include T-45, T-6, TH-57, and T-44 aircraft. Continued development engineering for improvements in reliability, maintainability, safety and meeting Federal Aviation Administration (FAA) Next Generation Air Transportation System (NextGen) flight safety requirements are required to ensure maximum benefit is achieved to provide effective cost of ownership and availability of aircraft to meet Chief of Naval Air Training (CNATRA) student training requirements. Specific efforts include, but are not limited to: T-45 Training System (TS) Required Avionics Sustainment Program (RASP) Phase I Automatic Dependent Surveillance-Broadcast (ADS-B) Out; T-6 Joint Primary Aircraft Training System (JPATS) Communication and Navigation System/Air Traffic Management (CNS/ATM); TH-57 Follow-On Training System and T-6 Rudder Binding Analysis.

This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	17.989	19.938	22.289	-	22.289
Current President's Budget	16.438	19.938	16.945	-	16.945
Total Adjustments	-1.551	0.000	-5.344	-	-5.344
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.171	0.000			
• SBIR/STTR Transfer	-0.381	0.000			
• Program Adjustments	0.000	0.000	-5.123	-	-5.123
• Rate/Misc Adjustments	0.001	0.000	-0.221	-	-0.221

Change Summary Explanation

FY 2018 adjustments include minor program adjustments:

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0603208N *I Training System Aircraft*

Schedule: T-45 Training System (TS) Required Avionics Sustainment Program (RASP) updated to reflect schedule impacts resulting from adjustment in technical baseline in May 2016. This technical baseline adjusted the development efforts for the T-45's navigation source Global Positioning System (GPS) to evaluate the possibility of incorporating a common GPS utilized by other aircraft into the T-45 for compliance with Federal Aviation Administration (FAA) Next Generation Air Transportation System (NextGen) requirements. This development and evaluation is being conducted in parallel with Automatic Dependent Surveillance Broadcast (ADS-B) Out efforts, which are necessary to satisfy FAA NextGen requirements.

Schedule: T-6 A/B schedule updated to add schedule for T-6A development efforts (United States Air Force led).

Schedule: TH-57 Follow-On system updated to reflect focus on system development efforts.

Schedule: Training System Improvement schedule updated to incorporate Joint T-6 study efforts with United States Air Force.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0603208N / *Training System Aircraft*	Project (Number/Name) 3367 / *Training Aircraft Updates*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3367: *Training Aircraft Updates*	13.115	16.438	19.938	16.945	-	16.945	6.593	2.618	2.681	2.734	0.000	81.062
Quantity of RDT&E Articles		24	-	-	-	-	-	-	-	-		

Note

The Federal Aviation Administration (FAA) has developed a plan to modernize the National Airspace System (NAS) in order to address the impact of air traffic growth in the United States. This multi-phase plan, called Next Generation Air Transportation System (NextGen) is intended to increase the air traffic capacity while at the same time improving safety and efficiency. In part, NextGen implements a capability called Performance Based Navigation (PBN) in which the aircraft's navigation performance capability will be a determining factor as to whether or not it can fly within specific airspace, certain air traffic routes or instrumental procedures. Also, NextGen transforms the NAS from a radar based system, with aircraft interrogation, to a satellite based system utilizing Automatic Dependent Surveillance-Broadcast (ADS-B) Out communication in order to transmit the aircraft's own position to the controllers and other ADS-B IN capable aircraft. PBN is an enabler for ADS-B functionality.

On May 28th, 2010 the FAA released DoT/FAA, 14 CFR Part 91: Automatic Dependent Surveillance-Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service Final Rule. This mandate stipulated that all aircraft required to have unrestricted access to operate in Classes A, B and C airspace; certain Class E airspace, and other specified airspace requiring ADS-B Out, must be in compliance with this regulation by January 1, 2020.

A. Mission Description and Budget Item Justification

The T-45 Training System (TS) Required Avionics Sustainment Program (RASP) Phase I ADS-B Out:

In order for the T-45TS to continue to have unrestricted access to the NAS through its projected end of service life, 2035, and avoid impacts to Chief of Naval Air Training (CNATRA) Strike Pilot and Naval Flight Officer (NFO) training, the T-45TS must develop, test and integrate the RASP Phase I ADS-B Out capability. This research and development effort is an ACAT III program and consists of the minimum required capability increase necessary to enable ADS-B Out in the T-45, equipping 197 aircraft and 18 simulators to meet the January 1, 2020 FAA ADS-B Out mandate. Specifically, this includes the development, integration, test and certification of the replacement for the APX-100 Transponder (with associated control panel, personality module, compliant navigation source and data bus connectivity), the replacement of the Air Data Computer (ADC), and the integration of these components with the existing aircraft antennas and Mission Display Processor (MDP) Operational Flight Program (OFP) software.

The T-6 Joint Primary Aircraft Training System (JPATS) Communication and Navigation System/Air Traffic Management (CNS/ATM):

JPATS is a joint United States Navy (USN)/United States Air Force (USAF) Acquisition Program designed to replace the aging primary aircraft (T-34/T-37) fleet. Principle JPATS mission is primary training for entry-level Navy/Air Force student pilots, associated instructor pilots, and primary/intermediate training for USN Naval Flight Officers (NFO). JPATS includes the T-6 Texan II, which is a stepped tandem seat, commercially derived aircraft powered by a single Pratt & Whitney PT6A-68 turboprop engine. It serves as the aircraft component of the JPATS integrated primary pilot training system. In order for the T-6 A&B training aircraft to continue to have unrestricted access to the national air space through its projected end of service life and avoid impacts to CNATRA primary entry-level student pilots and NFO

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

training, the T-6 program must develop, integrate, test and certify ADS-B Out capability for both the A&B models. This effort will consist of the minimum required capability increase necessary for ADS-B Out, enabling 295 aircraft and 34 simulators to meet the January 1, 2020 FAA mandate. This effort includes, but is not limited to, development, integration, test and certification.

The TH-57 Follow-On Training System:

The TH-57 Training System consists of TH-57B aircraft, TH-57C aircraft, and associated family of ground based training devices. The TH-57 Training System is experiencing obsolescence, diminishing manufacturing sources and material shortages, training capability gaps (as identified in the Capabilities based assessment Naval Aviation Undergraduate Flight Training), and increasingly expensive operating costs related to aging aircraft issues. This research and development effort will investigate alternatives for replacing the TH-57 training system and develop and validate the acquisition strategy for future procurement of the capability to continue to provide the fleet replacement squadrons with qualified and capable rotary-wing naval aviators to train on fleet platforms. This effort includes, but is not limited to, market research, requirements development, evaluation of acquisition strategies, evaluation of proposals, and testing of prototypes which are technically mature and ready for evaluation in the Engineering and Manufacturing Development phase.

Training System Improvements:

Efforts will provide for studies and analysis, design, development, integration and test of pre-production platform improvements for Naval Undergraduate Flight Training Systems, which will conduct engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production decisions.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: T45 Required Avionics Sustainment Program (RASP)	13.304	13.996	16.358	0.000	16.358
Articles:	18	-	-	-	-
Description: Funding supports development, integration, test, and certification of the Automatic Dependent Surveillance-Broadcast (ADS-B) Out capability in the T-45 Training System to comply with the January 1, 2020 Federal Aviation Administration ADS-B Out mandate.					
FY 2016 Accomplishments: Contract was awarded enabling the design and integration of the ADS-B Out solution for the T-45 to commence. It included the replacements to the transponder (with associated control panel, personality module, compliant navigation source and data bus connectivity), the Air Data Computer (ADC), and the integration of these components with the antennas and Mission Data Processor (MDP) Operational Flight Program (OFP) software. To allow for sufficient leadtime, 7 transponder kits and 7 ADC articles were purchased in FY 2016 (4 to support laboratory integration testing and 3 to support aircraft testing) for a total of 14 RDT&E,N articles.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue the design and integration of the ADS-B Out solution with several Systems Engineering Technical Reviews planned such as Systems Requirements Review (SRR) in Q1 FY 2017 and a combined Preliminary / Critical Design Review (PDR/CDR) planned for Q3 FY 2017. Continuation of the Technology Maturation and Risk Reduction / Engineering Manufacturing Development (TMRR/EMD) contract for this ACAT III program supports Milestone B in FY 2017 and the certification process. ***FY 2018 Base Plans:*** Continue the ADS-B Out design and integration efforts to support Test Readiness Review (TRR) in early FY 2018 followed by laboratory integration testing. Flight Readiness Review (FRR) is planned to complete in Q4 FY 20018 followed by the commencement of on-aircraft developmental test in support of certification and a Milestone C decision in early FY 2019. ***FY 2018 OCO Plans:*** N/A					
Title: T6 A/B Communication and Navigation System/Air Traffic Management (CNS/ATM) ***Articles:*** ***Description:*** Funding supports development, integration, test, and certification of the Automatic Dependent Surveillance-Broadcast (ADS-B) Out capability in the T-6 A/B Training System to comply with the January 1, 2020 Federal Aviation Administration ADS-B Out mandate. ***FY 2016 Accomplishments:*** Continued engineering and manufacturing development efforts for T-6B Automatic Dependent Surveillance-Broadcast (ADS-B) Out capability. Conducted preliminary design review and critical design review for T-6B efforts. ***FY 2017 Plans:*** Continue T-6B efforts with completion of test and evaluation and transition to procurement. For United States Air Force (USAF) led T-6A efforts, development contract award is anticipated in 3Q FY 2017. ***FY 2018 Base Plans:*** Continue USAF led T-6A development efforts with completion of test and evaluation and transition to procurement. ***FY 2018 OCO Plans:*** N/A	3.134 6	2.990 -	0.556 -	0.000 -	0.556 -
Title: TH-57 Follow-On Training System	0.000	2.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
Description: The TH-57 Training System consists of TH-57B aircraft, TH-57C aircraft, and associated family of ground based training devices. The TH-57 Training System is experiencing obsolescence, diminishing manufacturing sources and material shortages, training capability gaps (as identified in the Capabilities Based Assessment Naval Aviation Undergraduate Flight Training), and increasingly expensive operating costs related to aging aircraft issues. This research and development effort will investigate alternatives for replacing the TH-57 training system and develop and validate the acquisition strategy for future procurement of the capability to continue to provide the fleet replacement squadrons with qualified and capable rotary-wing Naval Aviators. This effort includes, but is not limited to, market research, requirements development, evaluation of acquisition strategies, evaluation of proposals, and testing of prototypes. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Activities to be conducted during FY 2017 include: analysis of alternatives and requirements development. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Training System Improvements	0.000	0.952	0.031	0.000	0.031
Articles:	-	-	-	-	-
Description: Funding provides for design, development, integration and test of platform improvements for Naval Undergraduate Flight Training Systems, which include T-45, T-6, TH-57 and T-44 aircraft. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Conduct engineering analysis and studies for reliability improvements to T-45 Data Acquisition Unit, T-35 Virtual Mission Training System (VMTS) Throttle Grip, T-44 Tail Section Fatigue Life, and Joint Study efforts for T-6 with Air Force. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue studies & development efforts for platform improvements for Naval Undergraduate Flight Training Systems, including but not limited to joint efforts with Air Force for Joint Primary Aircraft Training System (T-6). ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	16.438	19.938	16.945	0.000	16.945

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0569: *T45 Series*	81.652	114.887	148.071	-	148.071	171.974	174.024	178.532	182.092	757.990	2,527.971
• APN/0571: *JT Primary Acft Trnr Sys (JPATS)*	12.537	17.401	27.007	-	27.007	30.278	30.546	30.776	31.569	59.512	268.332

Remarks

D. Acquisition Strategy

T-45 Training System: Required Avionics Sustainment Program (RASP) Phase I is the first phase of an ACAT III Program of Record to equip the T-45 to operate in the Federal Aviation Administration's (FAA) Next Generation Air Transportation System (NextGen) airspace through the expected life of the T-45. The Research Development Test and Evaluation effort consists of a sole source Technology Maturation and Risk Reduction/ Engineering Manufacturing Development contract effort that awarded in FY 2016. Replacement kits for the Weapon Replaceable Assemblies (WRA) associated with the Automatic Dependent Surveillance-Broadcast (ADS-B) Out capability will be contracted through the Lead Systems Integrator for the Engineering Manufacturing Development phase through Test and Validation/Verification.

T6 Communication, Navigation, System/Air Traffic Management (CNS/ATM) and Avionics Upgrades for FAA Compliance are outside of the Joint Primary Aircraft Training System (JPATS) Major Defense Acquisition Program (MDAP) and will be established as a new Joint Acquisition Program with the United States Air Force. For the JPATS Avionics Upgrade for FAA Compliance effort, a competitive award will be the strategy for the T-6A air vehicles due to their federated design. The Navy is the lead for T-6B acquisition efforts and a sole-source strategy will be sought for the T-6B air vehicles due to proprietary hardware and software. Avionics in the T-6B are of an integrated design with proprietary hardware and software controlling input and output of navigation, communications, air data and other avionics information through an Integrated Avionics Computer (IAC). The CNS/ATM mandate requires integration into these systems in order to meet FAA Advisory Circular 20-165A Automatic Dependent Surveillance-Broadcast (ADS-B) Out system requirements and user capability requirements for flying in national airspace by 2020. Specifically, transponder and Global Positioning System (GPS) information that the ADS-B functions rely on are processed through proprietary software written to integrate with proprietary hardware designed by the same avionics manufacturer. A sole-source approach has been selected because the government does not own or have access to proprietary data to support development of hardware or software required to integrate ADS-B into the aircraft.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

The TH-57 Follow-On Training System effort will be established to determine and implement the most cost efficient and effective path forward for providing Rotary Wing Naval Aviators to the Fleet Replacement Squadrons. Possible acquisition paths include direct procurement of a new commercial off-the-shelf training system, some combination of procurement and services contract, or a services contract to provide aircraft, simulators, and ground instructors. This effort follows up the Office of the Chief of Naval Operations (OPNAV) N98 sponsored Capabilities Based Assessment Naval Aviation Undergraduate Flight Training Capabilities Based Assessment and follow on Initial Capabilities Document that is in work.

Training System Improvements: Efforts under this category are expected to be limited to those efforts meeting thresholds under the abbreviated acquisition category.

E. Performance Metrics

T-45 Training System: Performance of the program will be measured via the Acquisition and Systems Engineering Technical Review (SETR) Process for an ACAT III program. Milestone B is planned for 4th quarter FY 2017 with Milestone C planned for 1st quarter FY 2019.

T-6 Joint Primary Aircraft Training System (JPATS): For T-6B National Airspace Compliance is an Abbreviated Acquisition Program with Acquisition Milestones utilizing systems engineering processes.

TH-57 Follow-On Training System: The follow-on system to the TH-57 may be a new Major Defense Acquisition Program (MDAP) with Acquisition Milestones utilizing the systems engineering processes. If the procurement is determined to be services based, it will be a Category I services Acquisition.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0603208N / *Training System Aircraft*	Project (Number/Name) 3367 / *Training Aircraft Updates*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T45 Product Development Cost	SS/CPFF	Boeing : St. Louis, MO	2.633	9.525	Mar 2016	10.434	Sep 2017	12.126	Mar 2018	-		12.126	0.700	35.418	35.418
T6 Product Development Cost	C/CPFF	Beechcraft Defense Company, LLC/ HBC : Wichita, KS	3.716	0.154	May 2016	0.584	Nov 2016	0.290	Apr 2018	-		0.290	0.000	4.744	4.744
		Subtotal	6.349	9.679		11.018		12.416		-		12.416	0.700	40.162	40.162

Remarks

T6: FY 2018 Development Costs support United States Air Force led efforts for T-6A aircraft.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T45 Systems Engineering Support - EMD	WR	NAWCAD : Patuxent River, MD	3.751	0.945	Jan 2016	0.958	Nov 2016	0.975	Nov 2017	-		0.975	3.580	10.209	-
T45 Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	0.650	0.598	Jan 2016	0.500	Nov 2016	0.509	Nov 2017	-		0.509	3.178	5.435	-
T45 Engineering Study	SS/BOA	JHU : Laurel, MD	0.300	0.000		0.400	Jun 2017	0.000		-		0.000	0.000	0.700	0.700
T6 Systems Engineering Support	WR	NAWCAD : Patuxent River, MD	0.229	1.441	Jan 2016	1.342	Dec 2016	0.000		-		0.000	0.000	3.012	-
T6 Systems Engineering Support	WR	NADEP : Jacksonville, FL	0.000	0.101	Jan 2016	0.102	Dec 2016	0.000		-		0.000	0.000	0.203	-
T6 Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	0.380	0.675	Jan 2016	0.157	Dec 2016	0.000		-		0.000	0.000	1.212	-
TH57 Systems Engineering Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.051	Oct 2016	0.000		-		0.000	0.000	1.051	-
TH57 Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.252	Oct 2016	0.000		-		0.000	0.000	0.252	-
TH57 Business Case/ Engineering Study	SS/BOA	JHU : Laurel, MD	0.000	0.000		0.423	Jun 2017	0.000		-		0.000	0.000	0.423	0.423
Training System Improvement Engineering	MIPR	NAWCWD : China Lake, CA	0.000	0.000		0.164	Dec 2016	0.000		-		0.000	0.000	0.164	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0603208N / *Training System Aircraft*	Project (Number/Name) 3367 / *Training Aircraft Updates*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Study T-6 Joint Study Efforts															
Training System Improvement T-6 Joint Study Efforts	MIPR	AFRL : Wright-Patterson AFB	0.000	0.000		0.000		0.031	Nov 2017	-		0.031	0.000	0.031	-
Training System Improvement T-45 DAU Power Engineering Analysis	C/BA	L-3 : Madison, MS	0.000	0.000		0.150	Mar 2017	0.000		-		0.000	0.000	0.150	0.150
Training System Improvement T-45 VMTS Throttle Grip Engineering Analysis.	C/BA	Boeing : St. Louis, MO	0.000	0.000		0.512	May 2017	0.000		-		0.000	0.000	0.512	0.512
Training System Improvement T-44 Tail Section Fatigue Life Extension Study	C/FFP	Beechcraft Defense : Wichita, KS	0.000	0.000		0.126	Jun 2017	0.000		-		0.000	0.000	0.126	0.126
		Subtotal	5.310	3.760		6.137		1.515		-		1.515	6.758	23.480	-

Remarks

Training System Improvement: Cost category added for T-6 Joint Study Efforts, T-45 Engineering Analysis Studies, and T-44 Tail Section Fatigue Life Extension Study.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T45 Test & Certification	WR	NAWCAD : Patuxent River, MD	0.000	0.800	Jan 2016	0.350	Nov 2016	0.656	Nov 2017	-		0.656	1.448	3.254	-
T6 Test and Evaluation	C/CPFF	Beechcraft Defense Corp, LLC : Wichita, KS	0.000	0.000	Mar 2016	0.125	Dec 2016	0.000		-		0.000	0.000	0.125	0.125
TH57 Test and Evaluation	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	0.000	0.800		0.475		0.656		-		0.656	1.448	3.379	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0603208N / *Training System Aircraft*	Project (Number/Name) 3367 / *Training Aircraft Updates*	

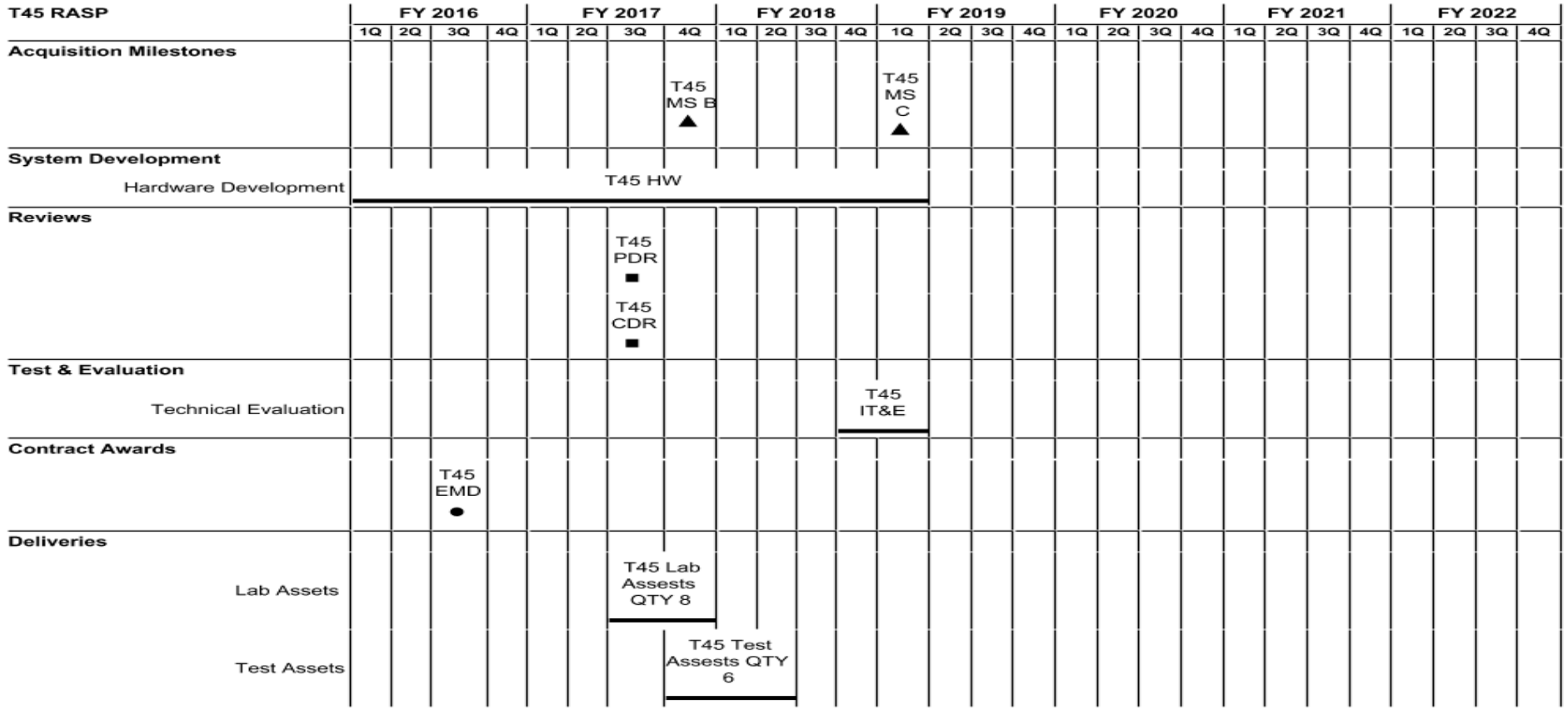
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T45 Program Management	Various	Various : Various	0.000	0.600	Jan 2016	0.600	Nov 2016	1.324	Nov 2017	-		1.324	2.200	4.724	-
T-45 Test Wing Maintenance	C/FFP	L-3 : Patuxent River, MD	0.000	0.830	Nov 2015	0.710	Oct 2016	0.723	Oct 2017	-		0.723	1.200	3.463	3.463
T45 Travel	Various	NAVAIR : Patuxent River, MD	0.020	0.006	Oct 2015	0.044	Oct 2016	0.045	Oct 2017	-		0.045	0.142	0.257	-
T6 Program Management	Various	Various : Various	1.416	0.475	Jan 2016	0.345	Nov 2016	0.000		-		0.000	0.000	2.236	-
T6 Test Wing Maintenance Parts	C/CPFF	DYNCORP International LLC : Patuxent River, MD	0.000	0.186	Oct 2015	0.285	Oct 2016	0.266	Oct 2017	-		0.266	0.000	0.737	0.737
T6 Travel	Various	NAVAIR : Patuxent River, MD	0.020	0.102	Oct 2015	0.050	Oct 2016	0.000		-		0.000	0.000	0.172	-
TH57 Progam Management	Various	Various : Various	0.000	0.000		0.232	Oct 2016	0.000		-		0.000	0.290	0.522	-
TH57 Travel	Various	Various : Various	0.000	0.000		0.042	Oct 2016	0.000		-		0.000	0.000	0.042	-
Training System Improvement Program Management	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	1.738	1.738	-
Training System Improvement Travel	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.150	0.150	-
		Subtotal	1.456	2.199		2.308		2.358		-		2.358	5.720	14.041	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	13.115	16.438		19.938		16.945		-		16.945	14.626	81.062	-

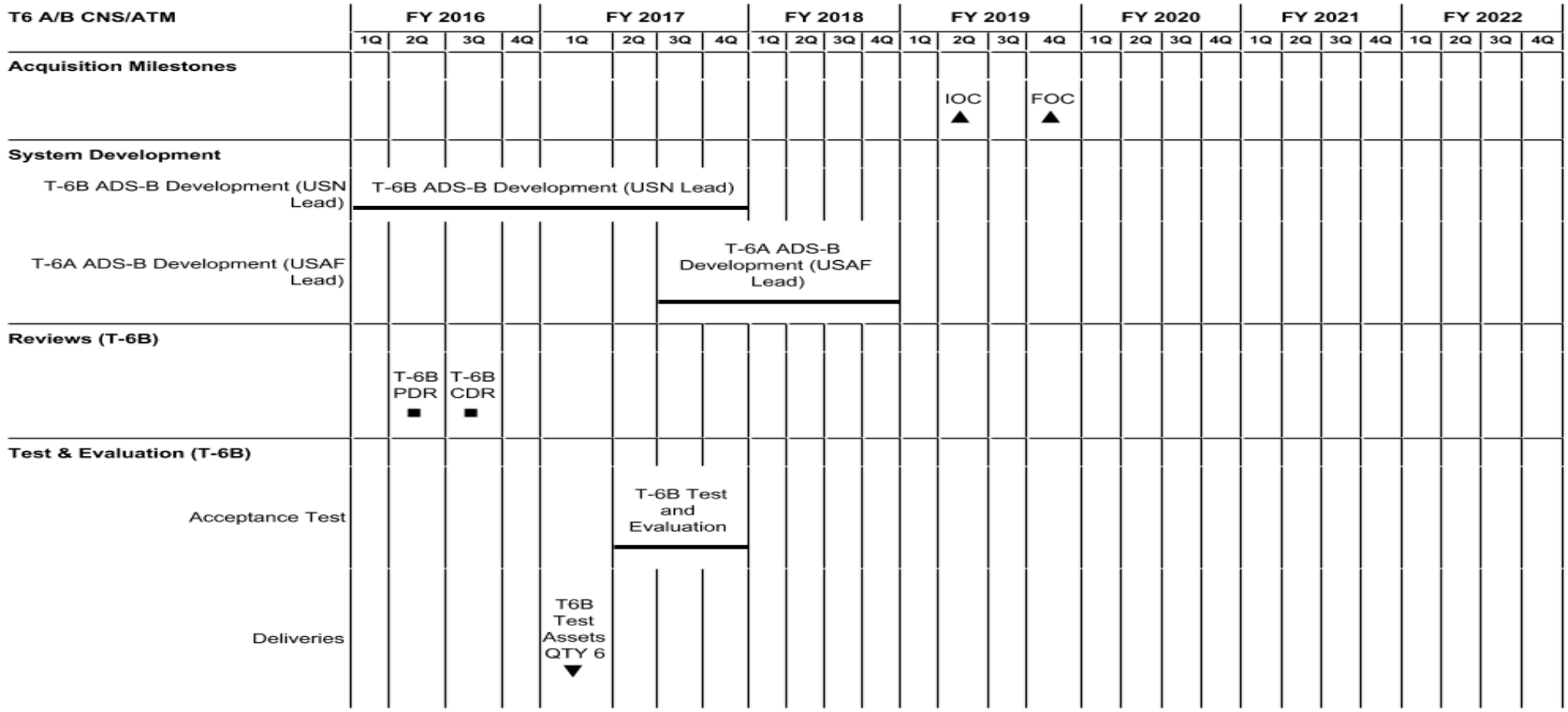
Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*



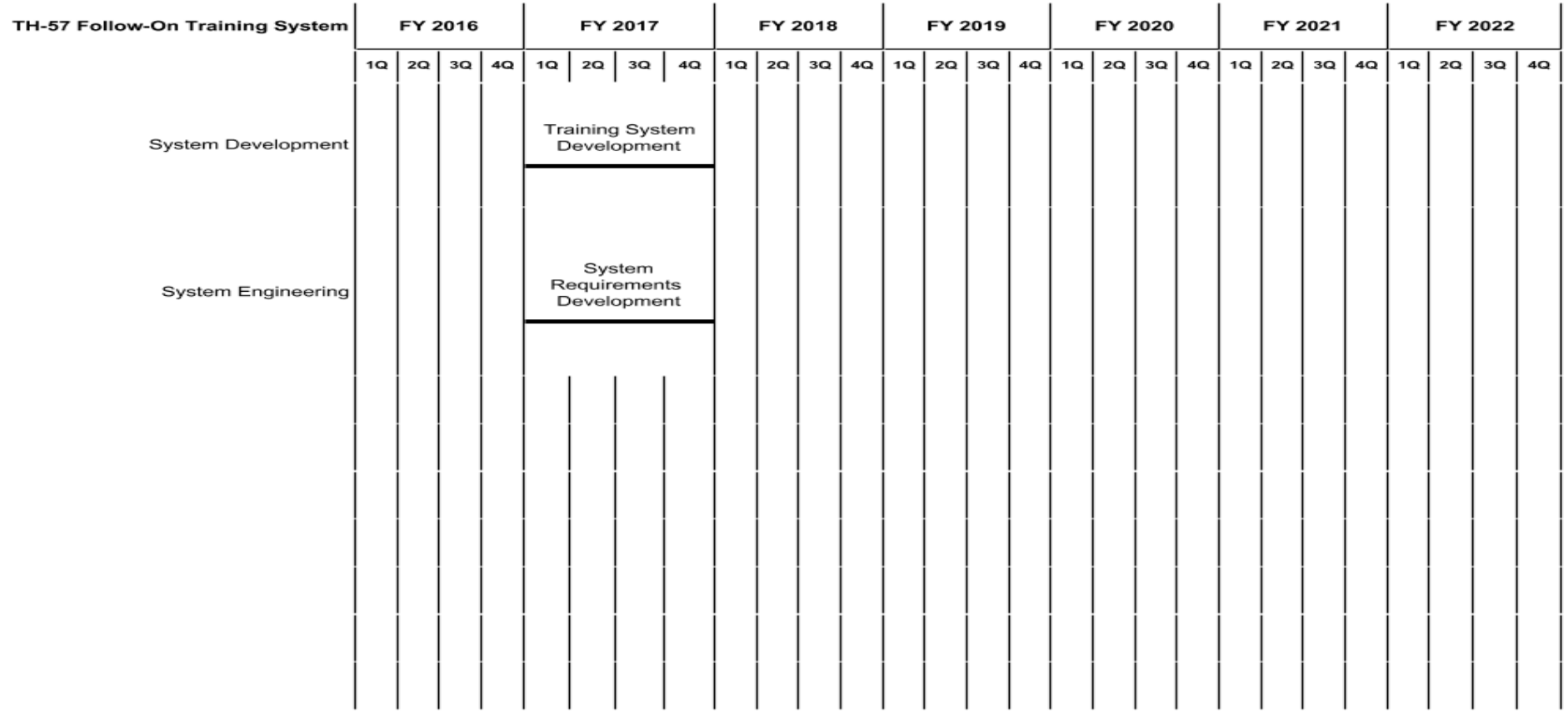
2018PB - 0603208N - 3367

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*



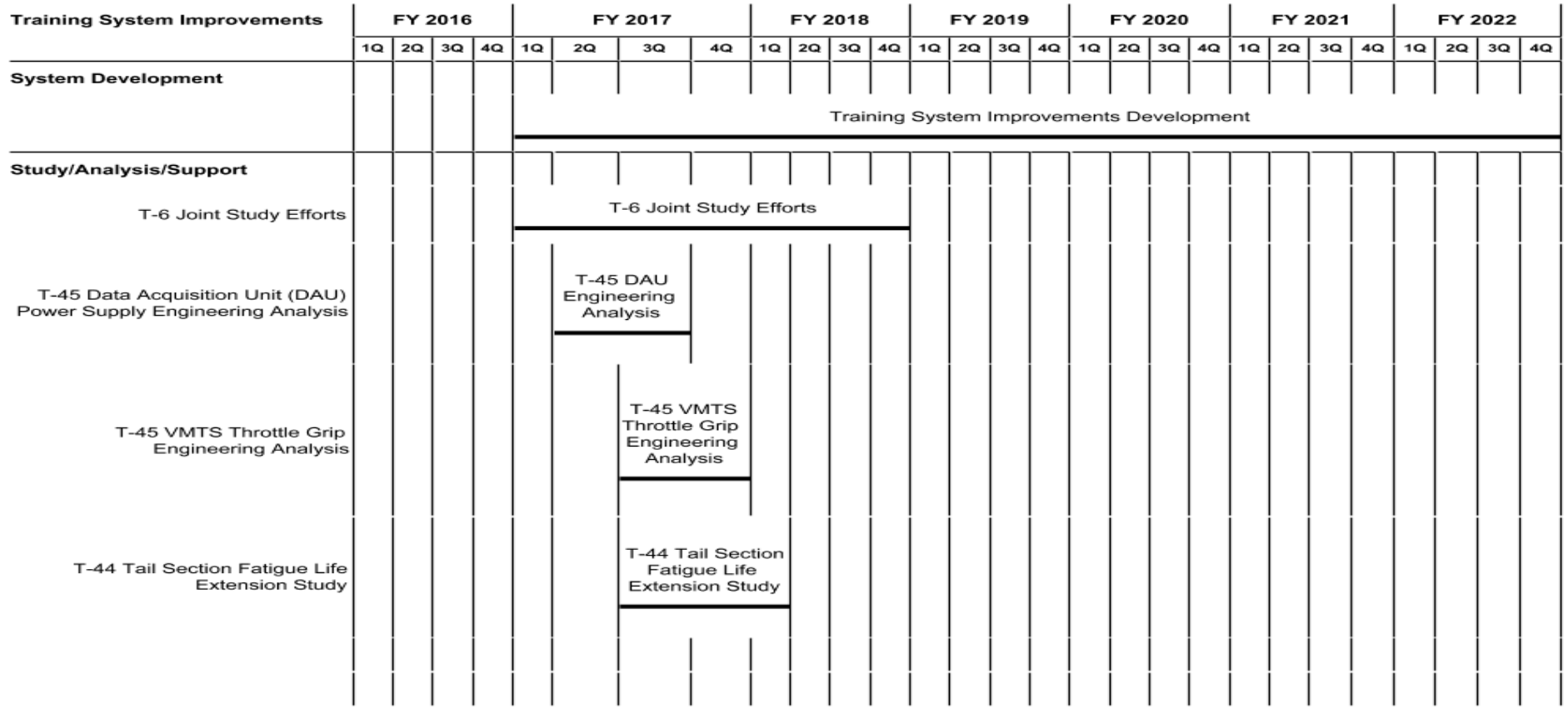
2018PB - 0603208N - 3367 Automatic Dependent Surveillance-Broadcast (ADS-B). T-6A ADS-B Development is Air Force Led. T-6B ADS-B Development is Navy led. Reviews, Test & Evaluation, and Test Assets listed reflect T-6B Development efforts.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*



2018PB - 0603208N - 3367

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*



2018PB - 0603208N - 3367

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
T45 RASP				
Acquisition Milestones: T45 Milestone B	4	2017	4	2017
Acquisition Milestones: T45 Milestone C	1	2019	1	2019
System Development: Hardware Development: T45 Hardware Development	1	2016	1	2019
Reviews: T45 Preliminary Design Review	3	2017	3	2017
Reviews: T45 Critical Design Review	3	2017	3	2017
Test & Evaluation: Technical Evaluation: T45 Integrated Test & Evaluation	4	2018	1	2019
Contract Awards: T45 Engineering Manufacturing Development	3	2016	3	2016
Deliveries: Lab Assets: T45 Lab Assets	3	2017	4	2017
Deliveries: Test Assets: T45 Test Assets	4	2017	2	2018
T6 A/B CNS/ATM				
Acquisition Milestones: Initial Operational Capability	2	2019	2	2019
Acquisition Milestones: Full Operational Capability	4	2019	4	2019
System Development: T-6B ADS-B Development (USN Lead): T-6B ADS-B Development	1	2016	4	2017
System Development: T-6A ADS-B Development (USAF Lead): T-6A ADS-B Development	3	2017	4	2018
Reviews (T-6B): T-6B Preliminary Design Review	2	2016	2	2016
Reviews (T-6B): T-6B Critical Design Review	3	2016	3	2016
Test & Evaluation (T-6B): Acceptance Test: T-6B Acceptance Test	2	2017	4	2017
Test & Evaluation (T-6B): Deliveries: Test Assets	1	2017	1	2017
TH-57 Follow-On Training System				
System Development: Follow-On Training System Development	1	2017	4	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
System Engineering: Follow-On Training System Requirements Development	1	2017	4	2017
Training System Improvements				
System Development: Training System Improvements Development	1	2017	4	2022
Study/Analysis/Support: T-6 Joint Study Efforts: T-6 Joint Study Efforts	1	2017	4	2018
Study/Analysis/Support: T-45 Data Acquisition Unit (DAU) Power Supply Engineering Analysis: T-45 DAU Engineering Analysis	2	2017	3	2017
Study/Analysis/Support: T-45 VMTS Throttle Grip Engineering Analysis: T-45 VMTS Throttle Grip Engineering Analysis	3	2017	4	2017
Study/Analysis/Support: T-44 Tail Section Fatigue Life Extension Study: T-44 Tail Section Fatigue Life Extension Study	3	2017	1	2018

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604212N *I Other Helicopter Development*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	848.246	12.070	6.268	26.786	-	26.786	32.685	35.475	54.355	139.570	Continuing	Continuing
1109: *CH/MH-53*	50.818	2.630	4.922	17.500	-	17.500	16.841	16.500	9.415	2.752	Continuing	Continuing
2415: *H-60 Development*	766.272	6.161	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	772.433
2460: *VH-3/VH-60*	31.156	3.279	1.346	1.309	-	1.309	1.354	0.000	0.000	0.000	0.000	38.444
3406: *Attack and Utility Replacement Aircraft*	0.000	0.000	0.000	7.977	-	7.977	14.490	18.975	44.940	136.818	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 390, 282												

Note

Proj: 2415 H-60 Development Service Life Assessment Program (SLAP) commenced in this PE in FY 2015 but moves to PE 0702207N in FY 2017.

A. Mission Description and Budget Item Justification

This Program Element includes funding for the development support for improvements to current systems for CH/MH-53, MH-60 development, VH-3/VH-60, and new development of Future Vertical Lift (FVL) capability. The H-53 is the premier heavy lift helicopter for the Marine Corps and the only operational airborne mine sweeping platform for the Navy. H-53 RDT&E efforts focus on trade studies and risk reduction measures to identify candidate survivability, safety, avionics, cargo handling, cockpit and other airframe specific improvements to extend the service life. The MH-60S Helicopter has three primary mission areas; Combat Support, Armed Helo which includes the Fast Attack Craft/Fast Inshore Attack Craft (FAC/FIAC) threat response capabilities and Airborne Mine Countermeasures. The VH-3/VH-60 is required to provide safe and timely transportation for the President and Vice President of the United States, heads of state and others as directed by the White House Military Office. Future Vertical Lift (FVL) is a Joint Department initiative to address vertical lift capability requirements and determine feasible and affordable solutions in support of the Joint Warfighter.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604212N *I Other Helicopter Development*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	11.101	6.268	10.104	-	10.104
Current President's Budget	12.070	6.268	26.786	-	26.786
Total Adjustments	0.969	0.000	16.682	-	16.682
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.030	0.000			
• SBIR/STTR Transfer	-0.060	0.000			
• Program Adjustments	0.000	0.000	16.997	-	16.997
• Rate/Misc Adjustments	-0.001	0.000	-0.315	-	-0.315

Change Summary Explanation

FY 2016 reprogramming increase in Project Unit 2415, H-60 Development by $1.030M was for Fixed Forward Firing Weapon (FFFW)/Rockets integration and testing for Digital Rocket Launcher with mixed loads, FFFW and Helmet Display Targeting System enhancements.

FY 2018 $9.0M increase to Project Unit 1109, CH/MH-53 for APR-39D(V)2; $7.971M increase to Project Unit 3406, Other Helo Development for Future Vertical Lift (FVL).

Technical:
2460 VH-3/VH-60: Not Applicable

Schedule:
1109 CH/MH-53: Not Applicable

2415 Fixed Forward Firing Weapon (FFFW): Updated FFFW System Integration and Developmental and Operational Testing on schedule.

2460 VH-3/VH-60: Not Applicable

3406: Not Applicable

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604212N / *Other Helicopter Development*	Project (Number/Name) 1109 / *CH/MH-53*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1109: *CH/MH-53*	50.818	2.630	4.922	17.500	-	17.500	16.841	16.500	9.415	2.752	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 390

A. Mission Description and Budget Item Justification

The H-53 helicopter is the premier heavy lift helicopter for the Marine Corps and the only operational airborne mine sweeping platform for the Navy. Through FY2021, H-53 efforts will continue to develop and qualify components, prior to production and approval decisions, in order to replace obsolete system components. Emphasis will be placed on supportability improvement modifications that will sustain the H-53 aircraft until the transition of the H-53K is complete. These efforts combined, will significantly improve the readiness of the H-53 fleet while reducing long term operational and supportability costs. Survivability efforts to address improved situational awareness to pilots will include improved Digital Interoperability and improve Degraded Visual Environment Awareness. Modeling and simulation will be used to the maximum practical extent throughout this effort. Manned Flight Simulator will be utilized to develop, install and test interim modifications to existing H-53 legacy avionics, while maintaining the original basic system footprint and functionality. As a part of this effort, a complete Electro Magnetic Vulnerability assessment will be required for the affected and/or modified systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: H-53 Avionics	0.768	1.847	2.848	0.000	2.848
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Integrated software applications for cockpit and avionics improvements, to include the development of new sensors. Investigated solutions to address the degraded visual environment. Developed flight control computer and test set design modifications to address anticipated obsolescence issues. Conducted Business Case Analyses to determine impact of high Operation and Support cost drivers and address alternatives to mitigate identified issues.					
FY 2017 Plans: Integrate software applications for cockpit and avionics improvements, to include the development of new sensors. Investigate solutions to address the degraded visual environment. Develop flight control computer and test set design modifications to address anticipated obsolescence issues. Conduct Business Case Analyses to determine impact of high Operation and Support cost drivers and address alternatives to mitigate identified issues. Initiate improved Degraded Visual Environmental Awareness to include coupled flight control capability.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Integrate software applications for cockpit and avionics improvements, to include the development of new sensors. Investigate solutions to address the degraded visual environment. Develop flight control computer and test set design modifications to address anticipated obsolescence issues. Conduct Business Case Analyses to determine impact of high Operation and Support cost drivers and address alternatives to mitigate identified issues. Create basis for APR-39D(V)2 to improve digital interoperability and detection against radar guided threats. ***FY 2018 OCO Plans:*** N/A					
Title: H-53 Survivability	0.583	0.440	1.296	0.000	1.296
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Performed trade studies, risk reduction, design, development, model, integration and test activities for H-53 survivability to include increased situational awareness via digital interoperability. ***FY 2017 Plans:*** Perform trade studies, risk reduction, design, development, model, integration and test activities for H-53 survivability to include increased situational awareness via digital interoperability. ***FY 2018 Base Plans:*** Perform trade studies, risk reduction, design, development, model, integration and test activities for H-53 survivability to include increased situational awareness via digital interoperability. ***FY 2018 OCO Plans:*** N/A					
Title: H-53 Propulsion	0.300	0.433	0.442	0.000	0.442
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Conducted Business Case Analyses to determine impact of high Operation and Support Propulsion cost drivers and address alternatives to mitigate. ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conduct Business Case Analyses to determine impact of high Operation and Support Propulsion cost drivers and address alternatives to mitigate, as well as addressing proposed solutions to the risk associated with #2 engine fires. ***FY 2018 Base Plans:*** Conduct Business Case Analyses to determine impact of high Operation and Support Propulsion cost drivers and address alternatives to mitigate, as well as developing/integrating proposed solutions to the risk associated with #2 engine fires. ***FY 2018 OCO Plans:*** N/A					
Title: Project Management Support ***Articles:*** ***FY 2016 Accomplishments:*** Provided in-house, field activity, and contractor support of IPTs to allow for studies and analyses, preparation of acquisition documentation and examination of equipment and avionics for the H-53. Efforts included, but are not limited to, government development support, engineering support, product management support, system engineering and logistics support, and travel for the H-53 program. ***FY 2017 Plans:*** Provide in-house, field activity, and contractor support of IPTs to allow for studies and analyses, preparation of acquisition documentation and examination of equipment and avionics for the H-53. Efforts include, but are not limited to, government development support, engineering support, product management support, system engineering and logistics support, and travel for the H-53 program. ***FY 2018 Base Plans:*** Provide in-house, field activity, and contractor support of IPTs to allow for studies and analyses, preparation of acquisition documentation and examination of equipment and avionics for the H-53. Efforts include, but are not limited to, government development support, engineering support, product management support, system engineering and logistics support, and travel for the H-53 program. ***FY 2018 OCO Plans:*** N/A	0.697 -	0.726 -	1.620 -	0.000 -	1.620 -
Title: H-53 Airframe	0.282	1.476	2.175	0.000	2.175

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued to develop and qualify components, prior to production and approval decisions, in order to replace obsolete system components. Performed trade studies, risk reduction, design, development, integration and test activities for the H-53 airframe to include, but not limited to, main rotor head, cowlings, aircraft structure, drive train, and various dynamic components. ***FY 2017 Plans:*** Develop software tool to support aircraft diagnostics, health monitoring and Fatigue Life Estimating (FLE) which will interface with Naval Enterprise Logistics Support Systems. Continue to develop tools to study/analyze and qualify components, prior to production and approval decisions, in order to replace obsolete system components. Perform trade studies, risk reduction, design, development, integration and test activities for the H-53 airframe to include, but not limited to, main rotor head, cowlings, aircraft structure, drive train, and various dynamic components. ***FY 2018 Base Plans:*** Develop software tool to support aircraft diagnostics, health monitoring and Fatigue Life Estimating (FLE) which will interface with Naval Enterprise Logistics Support Systems. The systems will provide a seamless environment for processing data, troubleshooting and documenting the technical updates required for the H-53 airframe. Continue to develop tools to study/analyze and qualify components, prior to production and approval decisions, in order to replace obsolete system components. Perform trade studies, risk reduction, design, development, integration and test activities for the H-53 airframe to include, but not limited to, main rotor head, cowlings, aircraft structure, drive train, and various dynamic components. ***FY 2018 OCO Plans:*** N/A					
Title: APR-39D(V)2	0.000	0.000	9.119	0.000	9.119
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 Base Plans:*** Provide ability for consolidating digital interoperability and improve the probability of detection against radar guided threats. Corrects deficiencies from previous receiver by enabling self protection from radar guided threats on the battlefield. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	2.630	4.922	17.500	0.000	17.500

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0528: *H-53 Series*	35.655	59.095	38.712	0.950	39.662	53.966	70.421	63.943	74.318	144.849	2,042.824

Remarks

D. Acquisition Strategy

This is a non-ACAT program. H-53 RDT&E efforts will focus on trade studies and risk reduction measures to identify candidate survivability, interoperability, safety, avionics, cargo handling, cockpit and other airframe specific improvements to extend the service life.

E. Performance Metrics

Successfully perform studies, analysis and develop software to address emergent H-53 issues. Successfully support developmental and operation test activities to qualify aircraft modifications/upgrades.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWC AD : Patuxent River, MD	4.292	0.661	Nov 2015	1.464	Nov 2016	1.618	Nov 2017	-		1.618	Continuing	Continuing	Continuing
Systems Engineering Contract	C/CPFF	Sikorsky : Stratford, CT	0.231	0.251	Feb 2016	0.981	Feb 2017	0.500	Feb 2018	-		0.500	0.000	1.963	1.963
Systems Engineering	WR	Various : Various	0.000	0.000		0.344	Nov 2016	0.600	Nov 2017	-		0.600	Continuing	Continuing	Continuing
Design and Development	TBD	TBD : TBD	0.000	0.000		0.000		4.995	Mar 2018	-		4.995	0.000	4.995	-
Prior Year Prod Dev no longer funded in the FYDP	TBD	TBD : TBD	19.475	0.000		0.000		0.000		-		0.000	0.000	19.475	-
		Subtotal	23.998	0.912		2.789		7.713		-		7.713	-	-	-

Remarks

Design and Development line item was added to fund the Prime Contract supporting the APR-39D(V)2 and DVE efforts

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	Various	Various : Various	3.257	0.628	Mar 2016	0.787	Mar 2017	4.876	Mar 2018	-		4.876	Continuing	Continuing	Continuing
GFE	Various	NAWC AD : Patuxent River, MD	3.131	0.450	Nov 2015	0.319	Nov 2016	0.137	Nov 2017	-		0.137	Continuing	Continuing	Continuing
		Subtotal	6.388	1.078		1.106		5.013		-		5.013	-	-	-

Remarks

Software Development line item increased in FY18 to fund the APR-39D(V)2 efforts and ALE tasks.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various : Various	7.712	0.268	Mar 2016	0.407	Mar 2017	1.674	Mar 2018	-		1.674	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	7.712	0.268		0.407		1.674		-		1.674	-	-	-

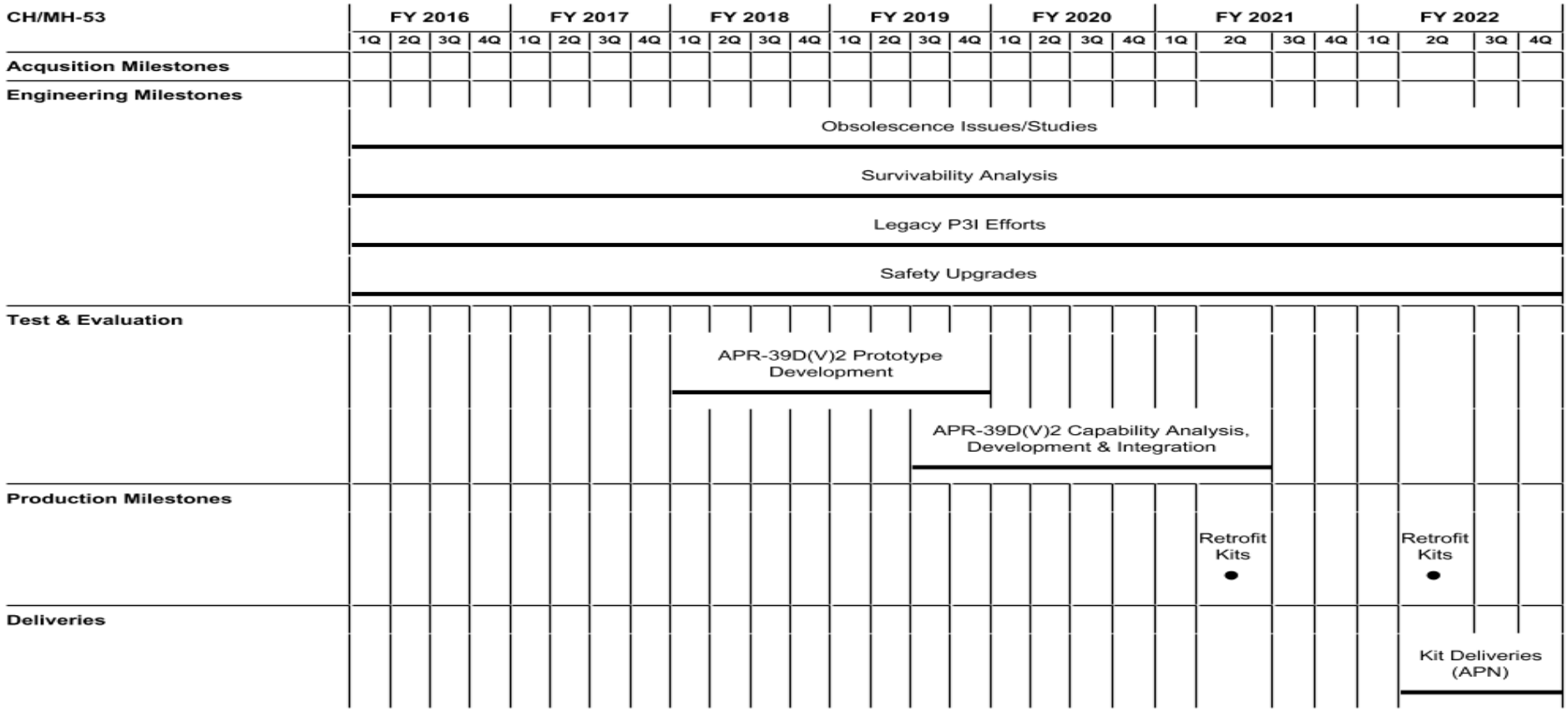
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support	WR	NAWC AD : Patuxent River, MD	6.189	0.325	Nov 2015	0.538	Nov 2016	2.950	Nov 2017	-		2.950	Continuing	Continuing	Continuing
Travel	Various	Various : Various	1.857	0.047	Oct 2015	0.082	Oct 2016	0.150	Oct 2017	-		0.150	Continuing	Continuing	Continuing
Prior Year Mgmt no longer funded in the FYDP	Various	Various : Various	4.674	0.000		0.000		0.000		-		0.000	0.000	4.674	-
		Subtotal	12.720	0.372		0.620		3.100		-		3.100	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	50.818	2.630		4.922		17.500		-		17.500	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*



2018PB - 0604212N - 1109

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CH/MH-53				
Engineering Milestones: - Obsolescence Issues/Studies	1	2016	4	2022
Engineering Milestones: - Survivability Analysis	1	2016	4	2022
Engineering Milestones: - Legacy P3I Efforts	1	2016	4	2022
Engineering Milestones: - Safety Upgrades	1	2016	4	2022
Test & Evaluation: APR-39D(V)2 Prototype Development	1	2018	4	2019
Test & Evaluation: APR-39D(V)2 Capability Analysis, Development & Integration	3	2019	2	2021
Production Milestones: Retrofit Kits-Base	2	2021	2	2021
Production Milestones: Retrofit Kits-Option	2	2022	2	2022
Deliveries: Kit Deliveries (APN)	2	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604212N / *Other Helicopter Development*	Project (Number/Name) 2415 / *H-60 Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2415: *H-60 Development*	766.272	6.161	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	772.433
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 282

A. Mission Description and Budget Item Justification

The Helicopter Combat Support mission provides organic fleet Armed Helo Fast Attack Craft/Fast Inshore Attack Craft (FAC/FIAC) threat response, maintains forward deployed fleet sustainability through rapid airborne delivery of materials and personnel and supports amphibious operations through search and rescue coverage. The aircraft conducts vertical replenishment, day/night ship-to-ship, ship-to-shore, and shore-to-ship external transfer of cargo; internal transport of passengers, mail and cargo, vertical on board delivery; airhead operations, and day/night search and rescue. Armed Helo and Airborne Mine Countermeasures (AMCM) were added as primary mission areas for the MH-60S as block upgrades to the platform. The MH-60S Operational Requirements Document (ORD) was modified in May 2000 to add AMCM as a primary mission for the MH-60S. ORD Change II was validated and approved by the Joint Requirements Oversight Council on 15 February 2008 updating key performance parameters. AMCM provides an organic capability for the Littoral Combat Ship Mine Countermeasures Mission Package. Armed Helo provides Special Warfare Support, Combat Search and Rescue, Surface Warfare and Maritime Interdiction Operations capability with Link 16 and Forward Firing Weapons which includes rockets and anti-swarm weapons to address the FAC/FIAC threat. Aircraft secondary roles include torpedo and drone recovery, noncombatant evacuation operations, and SEAL team and Explosive Ordnance Disposal support. Additionally, a Service Life Assessment Program (SLAP), trade studies, and analysis efforts to develop and qualify components to replace obsolete system components commences in FY 2015. These efforts will continue in PE 0702207N in FY 2017.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: MH-60S Airframe Development and Integration	1.603	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The effort includes analysis, design, integration, test and support for Fixed Forward Firing Weapon (FFFW)/Rockets to include Digital Rocket Launcher (DRL) with enhanced targeting capability for Helmet Display Targeting System.					
FY 2016 Accomplishments: Complete integration and support on FFFW/Rockets capability to include DRL with mixed loads and training development of FFFW capability.					
FY 2017 Plans: N/A					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 OCO Plans:*** N/A					
Title: MH-60S Test, Engineering, Logistics, Management Support ***Articles:*** ***Description:*** Navy field activity systems engineering, logistics support, management and travel for the Forward Firing Weapons (FFW)/Rockets integration to include Advanced Precision Kill Weapon System, Digital Rocket Launcher (DRL) with mixed loads and Airborne Mine Countermeasures (AMCM) MH-60S Sensor/Weapon Systems Integration team for airframe and avionics. Support/conduct MH-60S aircraft integration testing for FFW/Rockets and enhanced targeting capability with the Helmet Display Targeting System (HDTS). AMCM sensor/weapon system integration testing and support. Additionally, provide support to a service life assessment program and trade studies and analysis efforts. ***FY 2016 Accomplishments:*** Complete FFW/Rockets integration/testing for DRL with mixed loads, FFW and HDTS enhancements. Commence support for a service life assessment program and trade studies and analysis efforts. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	4.558 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	6.161	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN1/017900: *MH-60S*	28.232	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6,772.544
• APN5/053000: *H-60 MODS*	32.516	32.165	22.485	4.858	27.343	31.767	35.821	41.154	38.255	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost

Remarks

APN5/053000 reflects only MH-60S specific OSIPS 016-04 and 09-07 funding.

D. Acquisition Strategy

Armed Helo and Airborne Mine Countermeasures (AMCM) are elements of the existing MH-60S ACAT IC Program. MH-60S employed an evolutionary acquisition approach via the MH-60S Block Upgrades. This allowed for modification of systems still in early development. The block upgrades maximize commonality across all MH-60S missions and all Armed Helo/AMCM weapon systems, including logistics, training and maintenance. The MH-60S block upgrades are as follows:
-Block 1 - Combat Support Helicopter
-Block 2 - Organic AMCM
-Block 3 - Armed Helo

Block 2 aircraft are being upgraded to include Armed Helo Capability.

E. Performance Metrics

Successfully complete Forward Firing Weapons/Rockets Developmental/Operational Testing. Successfully achieve Initial Operational Capability for AMCM and Littoral Combat Ship Mine Countermeasures Mission Package.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Dev - Airframe*	SS/CPIF	Sikorsky : Stratford, CT	170.465	0.000		0.000		0.000		-		0.000	0.000	170.465	170.465
Primary Hdw Dev - Airframe FFW	SS/CPFF	Sikorsky : Stratford, CT	11.901	0.000		0.000		0.000		-		0.000	0.000	11.901	11.901
Primary Hdw Dev - Avionics*	SS/CPIF	Lockheed Martin : Owego, NY	225.189	0.000		0.000		0.000		-		0.000	0.000	225.189	225.189
Primary Hdw Dev - Avionics*FFW	SS/CPIF	Lockheed Martin : Owego, NY	9.242	0.000		0.000		0.000		-		0.000	0.000	9.242	9.242
Primary Hdw Dev - Avionics*FFW	MIPR	Army, DOTC : Picatinny, NJ	15.369	1.603	Mar 2016	0.000		0.000		-		0.000	0.000	16.972	-
Primary Hdw Dev - CSTRS	WR	NSWC : Panama City, FL	23.022	0.000		0.000		0.000		-		0.000	0.000	23.022	-
Primary Hdw Dev - CSTRS	MIPR	CECOM : APG, MD	13.629	0.000		0.000		0.000		-		0.000	0.000	13.629	-
Prior year Product Dev cost no longer funded in the FYDP	Various	Various : Various	51.554	0.000		0.000		0.000		-		0.000	0.000	51.554	-
		Subtotal	520.371	1.603		0.000		0.000		-		0.000	0.000	521.974	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ILS - MSS (Non FFRDC)	Various	Various : Various	3.784	0.372	Nov 2015	0.000		0.000		-		0.000	0.000	4.156	-
Integrated Logistics Support	WR	Various : Various	7.937	0.000		0.000		0.000		-		0.000	0.000	7.937	-
Prior year Support cost no longer funded in the FYDP	Various	Various : Various	8.589	0.000		0.000		0.000		-		0.000	0.000	8.589	-
		Subtotal	20.310	0.372		0.000		0.000		-		0.000	0.000	20.682	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Dev Test & Evaluation	WR	NAWCAD : Patuxent River, MD	57.270	2.084	Dec 2015	0.000		0.000		-		0.000	0.000	59.354	-
Dev Test & Evaluation	WR	Various : Various	26.803	0.375	Nov 2015	0.000		0.000		-		0.000	0.000	27.178	-
Operational Test & Evaluation	WR	OPTEVFOR : Norfolk, VA	5.927	0.200	Apr 2017	0.000		0.000		-		0.000	0.000	6.127	-
Prior year T&E cost no longer funded in the FYDP	Various	Various : Various	6.159	0.000		0.000		0.000		-		0.000	0.000	6.159	-
		Subtotal	96.159	2.659		0.000		0.000		-		0.000	0.000	98.818	-

Management Services ($ in Millions)

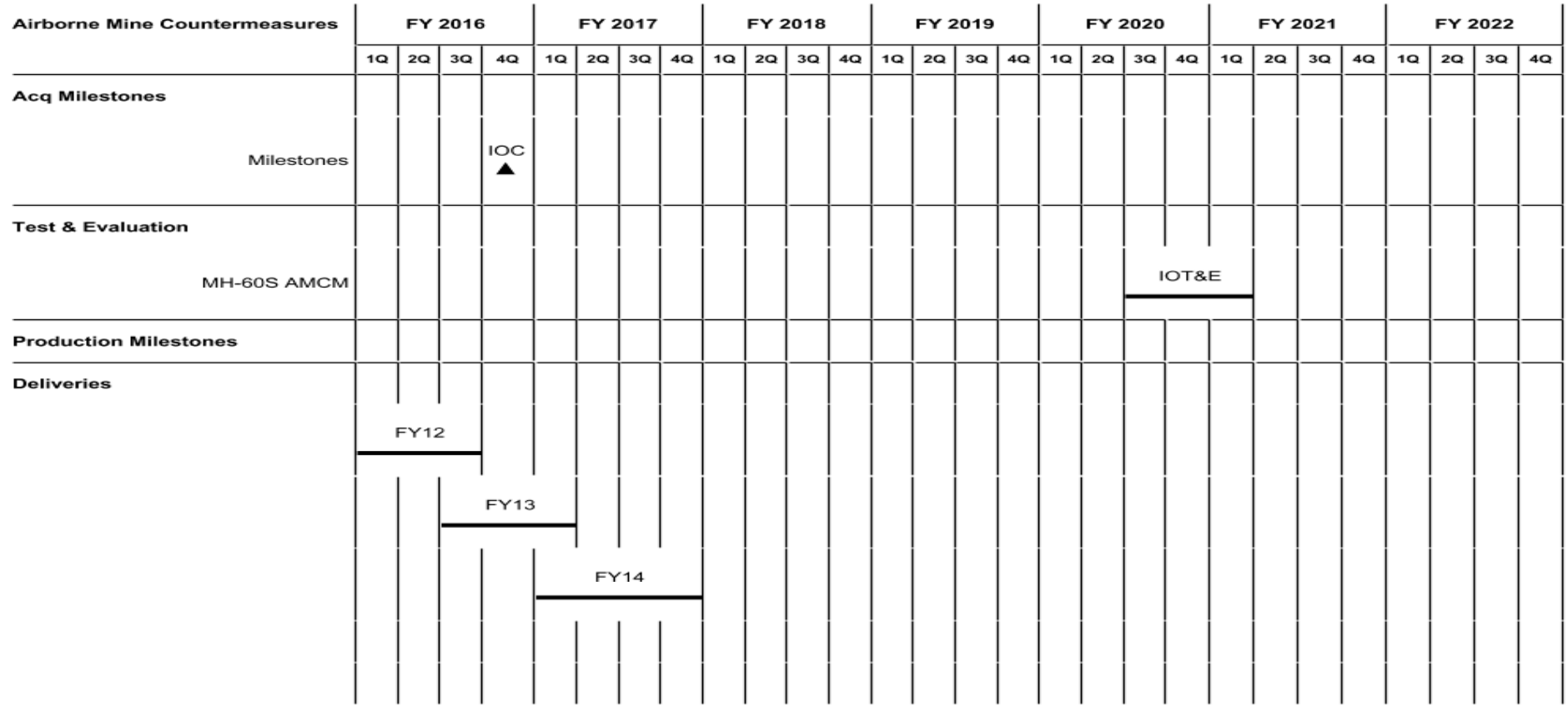
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Eng & Tech Srvc (Non FFRDC)	Various	Various : Various	23.057	0.149	Feb 2016	0.000		0.000		-		0.000	0.000	23.206	-
Government Engineering Support	WR	NAWCAD : Patuxent River, MD	18.842	0.845	Dec 2015	0.000		0.000		-		0.000	0.000	19.687	-
Government Engineering Support	WR	NSWC : Panama City, FL	34.307	0.000		0.000		0.000		-		0.000	0.000	34.307	-
Government Engineering Support	WR	Various : Various	27.606	0.517	Dec 2015	0.000		0.000		-		0.000	0.000	28.123	-
Program Mgmt Support CSS	WR	Various : Various	6.345	0.000		0.000		0.000		-		0.000	0.000	6.345	-
Program Mgmt Support	WR	Various : Various	15.040	0.000		0.000		0.000		-		0.000	0.000	15.040	-
Travel	WR	Various : Various	3.251	0.016	Oct 2015	0.000		0.000		-		0.000	0.000	3.267	-
Prior year Mgmt cost no longer funded in the FYDP	Various	Various : Various	0.984	0.000		0.000		0.000		-		0.000	0.000	0.984	-
		Subtotal	129.432	1.527		0.000		0.000		-		0.000	0.000	130.959	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604212N / *Other Helicopter Development*	Project (Number/Name) 2415 / *H-60 Development*	

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	766.272	6.161		0.000		0.000		-		0.000	0.000	772.433	-

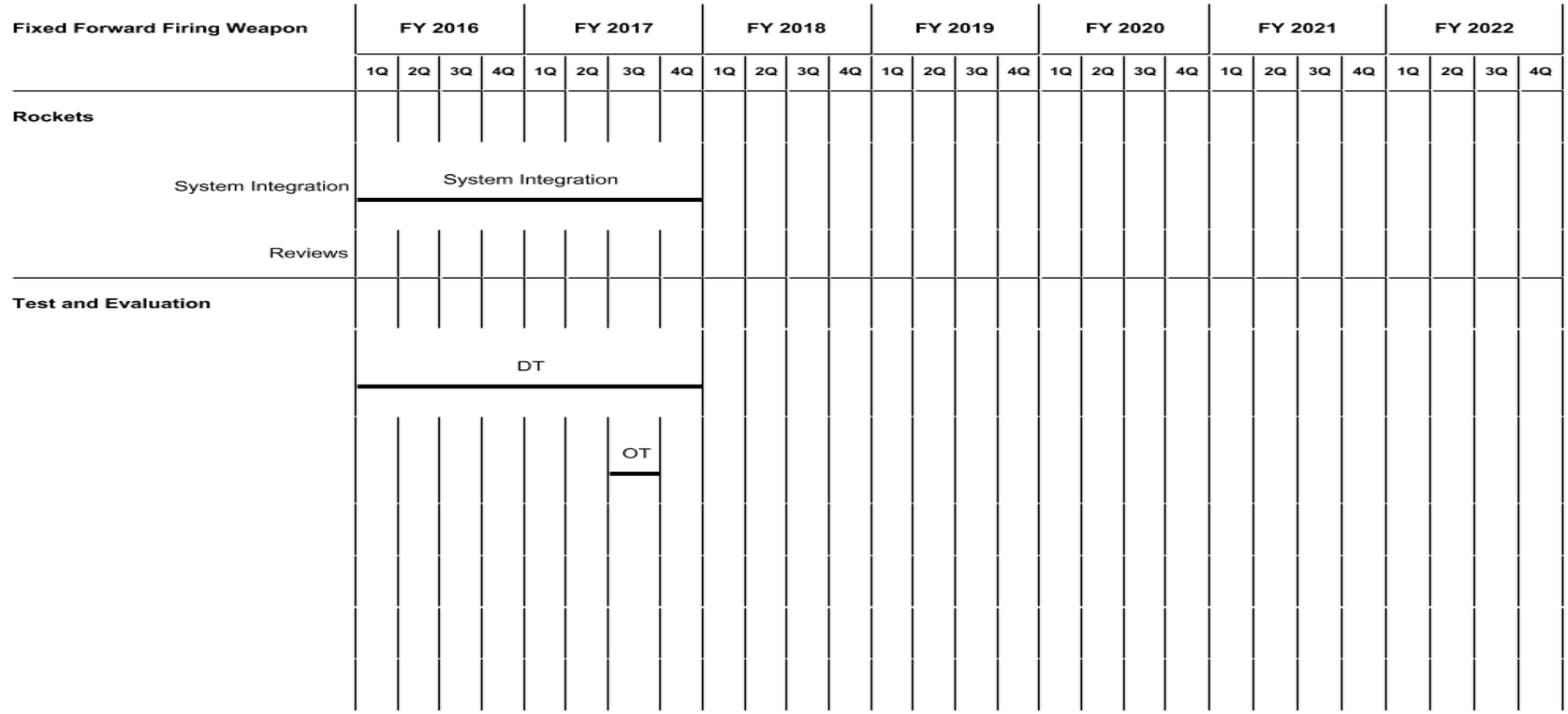
Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*



2018OSD - 0604212N - 2415

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*



2018OSD - 0604212N - 2415

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Airborne Mine Countermeasures				
Acq Milestones: Milestones: - Initial Operational Capability-AMCM	4	2016	4	2016
Deliveries: - Production Delivery (AMCM Ancillary Kits-FY12)	1	2016	3	2016
Deliveries: - Production Delivery (AMCM Ancillary Kits-FY13)	3	2016	1	2017
Deliveries: - Production Delivery (AMCM Ancillary Kits-FY14)	1	2017	4	2017
Fixed Forward Firing Weapon				
Rockets: System Integration: System Integration	1	2016	4	2017
Test and Evaluation: Developmental Testing (DT) (FFFW)	1	2016	4	2017
Test and Evaluation: Operational Testing (OT) (FFFW)	3	2017	3	2017

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604212N / *Other Helicopter Development*	Project (Number/Name) 2460 / *VH-3/VH-60*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2460: *VH-3/VH-60*	31.156	3.279	1.346	1.309	-	1.309	1.354	0.000	0.000	0.000	0.000	38.444
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Marine Helicopter Squadron One (HMX-1) is required to provide safe and timely transportation for the President and Vice President of the United States, heads of state and others as directed by the White House Military Office. Currently two Type, Model, Series aircraft are used by HMX-1 for the Presidential support mission - the VH-3D and the VH-60N. This project currently funds the VH Executive Helicopter's Aircraft Life Management Program.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: VH Executive Helicopter Aircraft Life Management Program	3.279	1.346	1.309	0.000	1.309
Articles:	-	-	-	-	-
Description: VH Executive Helicopter Aircraft Life Management Program: Provides for management and improvement of all Executive Helicopter systems readiness including safety, operational weight, mission availability, structural integrity, component reliability, maintainability, software, and obsolescence issues as they arise.					
FY 2016 Accomplishments: Provided initial capability for Phase II of Wide-Band Line of Sight (WBLoS) into first VH-3D Executive helicopter that included installation, testing, and verification actions associated with performance, drawings, and schematics. Supported software development and testing of first VH60N aircraft Operation Flight Program (OFP) as well as initial aircraft installation design efforts. Completed software testing for Phase II of WBLoS software OFP.					
FY 2017 Plans: Provide government program management and engineering support for efforts associated with the Aircraft Life and Management Program ensuring aircraft availability and mission readiness to the VH Executive Helicopters.					
FY 2018 Base Plans: Provide government program management and engineering support for efforts associated with the Aircraft Life Management Program ensuring aircraft availability and mission readiness to the VH Executive Helicopters.					
FY 2018 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2460 / *VH-3/VH-60*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Accomplishments/Planned Programs Subtotals	3.279	1.346	1.309	0.000	1.309

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/056600: *Executive Helicopters Series*	66.624	66.835	38.787	-	38.787	35.457	9.407	18.295	46.653	Continuing	Continuing

Remarks

Results of the Aircraft Life Management Program trade studies and risk reduction efforts will lead to modifications to be addressed through the program's Obsolescence Management Program and VH Comm Suite Upgrade Operational Safety and Improvement Programs as directed by the Deputy Secretary of Defense.

D. Acquisition Strategy

VH Executive Helicopter ALMP will include trade studies and risk reduction efforts necessary to address safety, operational weight, mission availability, structural integrity, component reliability, maintainability, software, and obsolescence issues as they arise.

E. Performance Metrics

Completion of VH Executive Helicopter Aircraft Life Management Program efforts.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604212N / *Other Helicopter Development*	Project (Number/Name) 3406 / *Attack and Utility Replacement Aircraft*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3406: *Attack and Utility Replacement Aircraft*	0.000	0.000	0.000	7.977	-	7.977	14.490	18.975	44.940	136.818	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Future Vertical Lift (FVL) is a Joint Department initiative to address vertical lift capability requirements and determine feasible and affordable solutions in support of the Joint Warfighter. The FVL Capability Set 3 (CS3) program, led by the Department of the Army, will develop and field a replacement for US Army and USMC aircraft with a more capable, maintainable, and reliable rotorcraft to meet the needs of the services. FVL will provide unmatched strategic, operational, and tactical agility to perform a multitude of missions currently unachievable by any conventionally configured rotorcraft. FVL will be a force multiplier with superior performance, payload, survivability, agility, endurance, and reliability that enables warfighters to win in a complex world. FVL offers revolutionary operational opportunities over current Vertical Take Off Landing (VTOL) aircraft and will field by 2031.

The Marine Corps FVL requirements emphasize range and speed similar to the MV-22. FVL will increase the MAGTFs' capacity of long-range fires. FVL will utilize DOTmLPF-P that will include all facets of a program with particular focus on life-cycle cost reductions through common processes, support equipment, logistic support and component commonality utilizing non-materiel solutions, such as maintenance strategies, training solutions, and infrastructure requirements. The air vehicle will include primary mechanical, electrical, pneumatic, and structural components such as drivetrain, generators, landing gear, pumps, controls, seats, etc. The mission subsystems will include all on- and off-board components with embedded control software for those components that provide all mission functionality, cockpit displays, cockpit hardware subsystem controllers, and interfaces. The architecture will include the fundamental organization of the complete system, the processing method/ component(s), the system level software, the operating environment, and the on-aircraft infrastructure to facilitate integration of all subsystems and platform.

The Defense Authorization Act of 2009 mandated that the services address critical technologies for future development to include development of a detailed S&T plan and the development of a strategic plan that establishes Joint requirements and emphasizes development of common services requirements. In Sep 2012, the Deputy Secretary of Defense signed the FVL Strategic Plan that established oversight groups to develop a roadmap for vertical lift air vehicles and common system development.

FVL is a new start in FY2018.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Future Vertical Lift	0.000	0.000	7.977	0.000	7.977
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 3406 / *Attack and Utility Replacement Aircraft*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Provide initial support for Future Vertical Lift (FVL) Analysis of Alternatives (AoA) to assess the technical feasibility, technical risk, and affordability of potential strategic solutions with the intent to develop the next generation of rotary wing aircraft supporting new Vertical Take Off Landing capabilities common with the US Army. Tasks to be performed include but are not limited to: AoA support, Acquisition Program Management functions, Engineering modeling and analysis, TEMP development, System Specification and Draft Capability Development Document development, and design trade studies and prototyping on the Air Vehicle and all associated systems. These efforts will include but not be limited to studies, virtual simulation, conceptual design, prototyping of Air Vehicle, Avionics, Propulsion and Dynamics, Communications and Navigation, Weapons and Fire Control, Human Systems Integration, Survivability and Vulnerability, Missions and Missions Systems Management, Reliability and Maintainability, Training, Logistics, Sensor, Pilotage and Targeting Systems, VMS/Flight Control, and Software/Hardware architecture. Support for these efforts will come from government, industry and academia such as Naval Research Labs, DARPA, John Hopkins APL, and various industry partners. Initial FVL contract awards for FY18 could be contract support services, academia, or industry quick turn studies. All contract actions will be smaller scale efforts to support the overall initial AoA effort. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	7.977	0.000	7.977

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Army plans to initiate an Analysis of Alternatives (AoA) in the 3rd Quarter FY 2017 to begin the assessment of the technical feasibility, operational feasibility, technical risk, and affordability of potential solutions. The AoA will take advantage of previous studies, ongoing Advanced Technology Development S&T projects, and

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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input from Government, Industry and Academia. The results of the AoA and Technology Readiness Assessments will be used to assist in determining if a Milestone A or Milestone B entry is appropriate. Once the appropriate Milestone entry point has been determined, the program will enter at the appropriate Milestone with an appropriate RFP Release. The program will complete development and testing of the most cost effective system before entering the Production and Deployment phase in the FY2031 timeframe.

E. Performance Metrics

A studies and analysis contract will be awarded 2Q FY 2018.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604214N *I AV-8B Aircraft - Engine Dev*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	352.672	26.939	34.902	48.780	-	48.780	46.695	38.034	19.115	17.355	Continuing	Continuing
0652: *AV-8B*	352.672	26.939	34.902	48.780	-	48.780	46.695	38.034	19.115	17.355	Continuing	Continuing

A. Mission Description and Budget Item Justification

The program provides for AV-8B Design, Development, Integration, and Test of various platform improvements such as: Engine Life Management Program (ELMP), Escape Systems, Joint Mission Planning System (JMPS), and Block upgrades to various mission systems and software, communications systems, navigation equipment, weapons carriage and countermeasures, and the Obsolescence Replacement (OR)/Readiness Management Plan (RMP) including structural, hydraulic, electrical, environmental, and mechanical systems. The JMPS is required as part of the Department of the Navy directed migration to a common Navy and Marine Corps mission planning system. OR/RMP represents all engineering activities for development and design to support aircraft safety flight clearances, concept explorations, responses to evolving threats, and developments to support Program Objective Memorandum. The program's Evolutionary Acquisition Strategy includes Design, Development, Integration, and Test activities under the consolidated effort of Block Developments: H6.1, H6.2 and follow-on block upgrades, to include a H7.0 block upgrade that will be required to implement full Link 16 capability and integrate AIM-9X. An H6.2 update, including the Common Avionics Program, provides AV-8B a self-contained Global Positioning System navigation capability that is required to access preferred airspaces, and will include a Litening Operational Flight Program (OFP) V3, and initial Link 16 Precise Participant Location and Identification capability, which will provide interoperability, digital combat identification and increase situational awareness on the battlefield. Link 16 is a Top 10 item in the Operational Advisory and Systems Safety Groups. AV-8B funding supports peculiar flight test requirements. The Link 16 full integration effort, which will require an H7.0 OFP upgrade beyond H6.2, will provide information sharing capabilities and integration of an increased number of Link 16 messages and the ability to act on shared target track information. Connection to the Link 16 network is vital to the AV-8B's ability to operate within some Command and Control situations and Operational Plans, as designed today, as well as provide a tactical capability for the more effective and safe prosecution of both airborne and ground targets. Continued AV-8B combat relevance and ability to respond to evolving and emergent threats through end of service is critical to the Marine Air-Ground Task Force's ability to generate aviation combat power throughout the transition to F-35B. J-series, K-series, Tactical Targeting Network Technology, and other emerging datalink technology messages are required to support current and future mission threads. Linked performance on par with current tactical platforms as well as design to communicate with F-35 is required for the AV-8B to remain tactically relevant to transition. H7.0 will also include the integration of weapons such as AIM-9X. Unique Weapons and Countermeasures integration and stores expansion testing will be required, to include Advanced Precision Kill Weapons System, AIM-9X, ALE-43, standoff weapons such as Joint Standoff Weapons (JSOW) and AIM-120 unique platform flight test which will be required to utilize updated AIM-120C variants on the AV-8B and utilize the AIM-120 in mixed stores loadouts. The ELMP is a comprehensive plan to increase and maintain safety of flight and operational readiness of the AV-8B F402-RR-408 Engine and accessories. PMA-257 will accomplish this mission by conducting Engineering Project Description investigations to develop engineering solutions that address emergent safety, obsolescence, fatigue life and maintenance issues. The OR/RMP is required to ensure the AV-8B air vehicle's sustained mission availability, and safe and reliable operational readiness until end of service. Air vehicle sustainment requires component and system analyses, technical planning, identification, prioritization, and diagnosis of emergent problems and the allocation of resources for the development, testing and flight clearance of engineering solutions in the areas of flight, crew safety, and escape systems and structural integrity, obsolescence, systems reliability and maintainability, inventory preservation, alternative mission development, or other emergent material or equipment conditions affecting AV-8B systems readiness. Activities include research/analysis for system safety deficiency corrections, fuel system safety improvements, structural analyses, monitoring and integrity analysis, component compatibility, component and materials obsolescence analyses and mitigation development, explorations for aging equipment, reliability improvement

analyses and design developments. FY 2018 continues development efforts and associated obsolescence and readiness requirements for ELMP, RMP, Link 16, weapons carriage/integration, peculiar flight test and OFP updates.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	27.668	33.664	39.078	-	39.078
Current President's Budget	26.939	34.902	48.780	-	48.780
Total Adjustments	-0.729	1.238	9.702	-	9.702
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.728	0.000			
• Program Adjustments	0.000	1.238	10.000	-	10.000
• Rate/Misc Adjustments	-0.001	0.000	-0.298	-	-0.298

Change Summary Explanation

Cost:

FY 2017 and 2018 Adjustments to Operational Flight Program (OFP) and Avionics Weapons Systems Development and Integration for AIM-9X integration/ development and AIM-120 adjacent stores testing.

Schedule:

AIM-9X Systems Development added in 1Q/18 through 1Q/20 to capture AIM-9X development as part of H7.0 OFP.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604214N / *AV-8B Aircraft - Engine Dev*	Project (Number/Name) 0652 / *AV-8B*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0652: *AV-8B*	352.672	26.939	34.902	48.780	-	48.780	46.695	38.034	19.115	17.355	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides for AV-8B Design, Development, Integration and Test of the following improvements: The Engine Life Management Program (ELMP), Operational Flight Program (OFP) and Avionics/Weapons Integration, Escape System, and Readiness Management Plan (RMP). The ELMP is a comprehensive plan to increase safety of flight and operational readiness of the AV-8B F402-RR-408 Engine and Gas Turbine Starter, as well as other critical engine components. The Program Office will accomplish this mission through the Component Improvement Program, which entails Engineering Project Description investigations to derive safety and reliability improvements to the engine and engine components. The Joint Mission Planning System is required as part of the Department of Navy directed migration to a common Navy and Marine Corps mission planning system. H6.1 provided enhancements and software corrections, and H6.2 provides Global Positioning System navigation capabilities, a Litening common OFP and initial Link 16 capability to include use of the APX-123, initial Mode 5 capability, as well as software updates. H7.0 OFP will integrate full Link 16 capability and provide software updates. H7.0 will also integrate AIM-9X, provide Advanced Precision Kill Weapon System integration improvements, and common avionics ADS-B (out), Mode 5, and Mode S Identification Friend or Foe capabilities. Other specific efforts include peculiar integration and flight test requirements such as AIM-120C flight test, as AIM-120A/B will become obsolete, as well as AIM-120 mixed stores flight test, unique weapons and countermeasures integration and stores expansion to include Advanced Precision Kill Weapons System, AIM-9X, ALE-43, standoff weapons such as Joint Standoff Weapons (JSOW) and unique flight test of other avionics or weapons systems as they arise. The program is working closely with the Common Avionics Program and the Allies (Spain and Italy) on all efforts. RMP represents all engineering activities for development, design and test to support aircraft safety, flight clearance and concept exploration for resolution of emergent safety, service life, escape systems, compatibility, obsolescence, and readiness issues as well as response to fleet urgent operational requirements.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Development of RMP Engineering Change Proposals	6.246	9.772	10.294	0.000	10.294
Articles:	-	-	-	-	-
Description: Develop obsolescence solutions to improve safety, structural integrity, and systems reliability of the AV-8B aircraft.					
FY 2016 Accomplishments: Extension to AV-8B End of Service date requires continued obsolescence mitigation efforts to preclude aircraft on ground. The program continued to address known, predicted, and emergent obsolescence equipment issues. Systems engineering supported ongoing and emergent analysis and design/development efforts required to identify Engineering Change Proposal requirements to correct systems safety, structural integrity, compatibility, and readiness issues. Continued fatigue life tracking analyses and algorithm update					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604214N / *AV-8B Aircraft - Engine Dev*	**Project (Number/Name)** 0652 / *AV-8B*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
development. Continued design of Brake Temperature monitoring system to prevent brake fires and improve safety. Continued the development of Improved Gun Shutoff Valve, Hand Operated Strut, Brake Temperature and Main Landing Gear Strut Servicing Indication Systems and Environmental Control System capacity (Turbine) improvements. Continued system engineering analyses and design for GR-9 component compatibility. ***FY 2017 Plans:*** Extension to AV-8B End of Service date requires continued obsolescence mitigation efforts to preclude aircraft on ground. The program will continue to address known, predicted, and emergent obsolescence equipment issues, continuing efforts from prior years and develop replacements for the Pitot Static Probe, obsolete canopy transparency and composite materials components including landing gear doors. Continue fatigue life tracking analyses and algorithm update development. Continue system engineering analyses and design for GR-9 component compatibility. Continue the development of Brake Fire Mitigation, Main Landing Gear Strut Servicing Indication Systems, Hand Operated Strut, Outboard Pylon Stations 1&7 Attachment Fittings, Gun Shutoff Valve, and Outrigger Landing Gear. Begin Nose Landing Gear Door Redesign. Systems engineering will support ongoing and emergent analysis and design/development/test efforts required to identify Engineering Change Proposal requirements to correct systems safety, structural integrity, compatibility, and readiness issues including efforts required to respond to evolving and emergent threats, mission systems, communications systems, navigation equipment, weapons carriage and countermeasures, structural, hydraulic, electrical, environmental, and mechanical systems. ***FY 2018 Base Plans:*** Extension to AV-8B End of Service date requires continued obsolescence mitigation efforts to preclude aircraft on ground. The program will continue to address known, predicted, and emergent obsolescence equipment issues, continuing efforts from prior years. Continue fatigue life tracking analyses and algorithm update development. Continue system engineering analyses and design for GR-9 component compatibility. Continue the development of Brake Fire Mitigation, Main Landing Gear Strut Servicing Indication Systems, Hand Operated Strut, Outrigger Landing Gear, and Nose Landing Gear Door Redesign. Conduct flight tests for Pitot Static Probe replacements and canopy transparency replacement material. Begin Fuselage Fatigue Life Assessment to assure continued safe operation of the aircraft through the end of service date. Systems engineering will support ongoing and emergent analysis and design/ development/test efforts required to identify Engineering Change Proposal requirements to correct systems safety, structural integrity, compatibility, and readiness issues including efforts required to respond to evolving and emergent threats, mission systems, communications					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604214N / *AV-8B Aircraft - Engine Dev*	**Project (Number/Name)** 0652 / *AV-8B*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
systems, navigation equipment, weapons carriage and countermeasures, structural, hydraulic, electrical, environmental, and mechanical systems. ***FY 2018 OCO Plans:*** N/A					
Title: Operational Flight Program (OFP) and Avionics Weapons Systems Development and Integration	14.519	19.311	32.674	0.000	32.674
Articles:	-	-	-	-	-
Description: Develop, integrate, and test aircraft OFP updates, mission planning updates, Litening Pod software updates/capability expansions, support aircraft avionics development efforts, integrate and test unique weapons systems and countermeasures such as AIM-120C, AIM-9X, Advanced Precision Kill Weapon System, ALE-43, standoff weapons such as Joint Standoff Weapons (JSOW) and other weapons/avionics systems as they arise, perform stores expansion testing, and conduct Digital Interoperability (to include Link 16) development, integration, and test efforts. Evaluate future capability expansions via studies and analyses. ***FY 2016 Accomplishments:*** Funds provided for future capability expansion studies and analyses, peculiar flight test requirements to include weapons/countermeasures/stores expansion integration and testing, and aircraft Operational Flight Program (OFP)/Litening Pod software updates and developmental test as part of the H6.2 upgrade. Continued developmental testing of second Mission Systems Computer processor card. Began H7.0 OFP/Link 16 integration efforts. ***FY 2017 Plans:*** Funds will provide for future capability expansion studies and analyses efforts, efforts required to respond to evolving and emerging threats, peculiar flight test requirements to include various required weapons/ countermeasures/stores expansion integration and testing such as AIM-120, AIM-9X, ALE-43, Advanced Precision Kill Weapon System, and other weapons/avionics systems as they arise, aircraft Operational Flight Program/Litening Pod software updates, initial Link 16 capability integration and developmental/integrated test as part of the H6.2 upgrade. Continue Link 16 hardware and software integration and test efforts in conjunction with H6.2 OFP. Continue H7.0 OFP/Link 16 software integration efforts. ***FY 2018 Base Plans:*** Funds will provide for future capability expansion studies and analyses efforts, efforts required to respond to evolving and emerging threats, peculiar flight test requirements to include various required weapons/ countermeasures/stores expansion integration and testing such as AIM-120, AIM-9X, ALE-43, JSOW, Advanced Precision Kill Weapon System, and other weapons/avionics systems as they arise, aircraft Operational Flight					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604214N / *AV-8B Aircraft - Engine Dev*	**Project (Number/Name)** 0652 / *AV-8B*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Program/Litening Pod software updates, initial Link 16 capability integration and developmental/integrated test as part of the H6.2 upgrade. Continue Link 16 hardware and software integration and test efforts in conjunction with H6.2 OFP, and field H6.2 OFP. Continue H7.0 OFP/Link 16/AIM-9X software integration and test efforts. ***FY 2018 OCO Plans:*** N/A					
Title: F402-RR-408 Engine Safety and Reliability Enhancements ***Articles:*** ***Description:*** Improve Safety and Reliability of the F402-RR-408 Engine for the AV-8B Harrier. ***FY 2016 Accomplishments:*** The engineering Component Improvement Program (CIP) conducted investigations that developed improvements and design solutions for correction of deficiencies and issues resulting from safety, obsolescence, and structural fatigue for the engine and engine accessories. ***FY 2017 Plans:*** The engineering CIP will conduct investigations to develop Engineering Change Proposals (ECPs) for improvements and develop design solutions for correction of deficiencies and issues resulting from safety, obsolescence, and structural fatigue for the engine and engine accessories. ***FY 2018 Base Plans:*** The engineering CIP will conduct engineering investigations to develop ECPs for improvements and design solutions to correct deficiencies resulting from safety, obsolescence, and structural fatigue for the engine and engine accessories, to maintain readiness and to meet mission requirements. ***FY 2018 OCO Plans:*** N/A	6.174 -	5.819 -	5.812 -	0.000 -	5.812 -
Accomplishments/Planned Programs Subtotals	26.939	34.902	48.780	0.000	48.780

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0514: *AV-8 Series*	78.065	62.302	43.555	-	43.555	58.464	43.447	35.119	39.158	189.955	1,811.980

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604214N / *AV-8B Aircraft - Engine Dev*	**Project (Number/Name)** 0652 / *AV-8B*

D. Acquisition Strategy

The Obsolescence Replacement (OR)/Readiness Management Plan (RMP) ensures the maximum readiness levels for the AV-8B Type/Model/Series by maintaining post production engineering and logistic support with the two Original Equipment Manufacturers (OEM's). RMP tracks readiness degraders, identifies and addresses obsolescence for non avionics systems, and identifies and addresses emerging in-service material developments related to ease of maintenance, safety, airframe life management and improved performance. The multi-disciplined team of program management, engineering, logistics, and financial personnel develop ECPs, Rapid Action Minor Engineering Changes, Interim Rapid Action Changes to publications, trainer and support equipment modifications necessary to maintain aircraft reliability and safety. The RMP additionally supports the constant improvement and analysis of fleet Fatigue Life Expended data to maximize aircraft structural life and to support the NAVAIR annual Structural Appraisal of Fatigue Effects report required by OPNAV. Funding for the Engine Life Management Program will be placed on a cost-type contract to Rolls-Royce to address safety of flight issues, top readiness degraders, engine removal and mission failure drivers in order to improve Fleet readiness and reduce cost of ownership of the F402-RR-408 and accessories. It is also developed to assess life management program issues and design fixes for any service revealed deficiencies. The program's Evolutionary Acquisition Strategy includes Design, Development, Integration and Test activity under the consolidated effort of Block Developments: H2.0, H4.0, H5.0, H6.0, H6.1, H6.2, H7.0 and following Operational Flight Programs. The development and integration of Joint Mission Planning System occurred concurrently with H2.0. H4.0 Block improvements included the Tactical Aircraft Moving Map Capability. H5.0 Block Upgrade provided Dual Mode Laser Guided Bomb, Litening Centerline/Station 4 (improvement of current weapons carriage capability). The H6.2 update is being accomplished in conjunction with the Common Avionics Program and provides a Global Positioning System Navigation capability for AV-8B, a Litening Common Operational Flight Program, initial Link 16 capability to include the use of APX-123 and initial Mode 5 functionality. Full Link 16 integration will require an H7.0 Operational Flight Program subsequent to H6.2 and will provide the AV-8B and Link 16 capability. H7.0 will also be accomplished in conjunction with Common Avionics Program and will integrate AIM-9X, ADS-B (out), Mode 5, Mode S and Advanced Precision Kill Weapon System integration improvements. Peculiar flight test efforts to include weapons integration such as AIM-120, AIM-9X, Advanced Precision Kill Weapons Systems, ALE-43, standoff weapons such as Joint Standoff Weapons (JSOW), other avionics/weapons systems as they arise, and stores expansion effort will be conducted by NAWCWD and AV-8B flight test squadrons.

E. Performance Metrics

Achieve Engine Life Management Program Rolls-Royce Component Improvement Program cost plus fixed fee contract award 1st Quarter FY 2018.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604214N / *AV-8B Aircraft - Engine Dev*	Project (Number/Name) 0652 / *AV-8B*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development - ELMP	C/CPFF	Rolls-Royce PLC : Bristol, GB	30.462	1.802	Dec 2015	1.684	Dec 2016	1.429	Dec 2017	-		1.429	7.874	43.251	43.251
Primary Hardware Development - ELMP	C/FFP	ONTIC (Goodrich) PS : Pitstone, GB	5.861	0.200	Mar 2016	0.220	Mar 2017	0.600	Mar 2018	-		0.600	1.380	8.261	8.261
Primary Hardware Development - OFP	WR	NAWCWD : China Lake, CA	46.229	3.357	Jan 2016	7.574	Dec 2016	16.389	Dec 2017	-		16.389	Continuing	Continuing	Continuing
Primary Hardware Development - OFP	C/FFP	Boeing : St. Louis, MO	0.000	5.437	Jan 2016	2.740	Dec 2016	1.023	Dec 2017	-		1.023	3.319	12.519	12.519
Primary Hardware Development - OFP	C/CPFF	Raytheon : Waltham, MA	0.000	0.000		0.550	Apr 2017	3.750	Dec 2017	-		3.750	4.596	8.896	8.896
Systems Engineering - RMP	C/FFP	Boeing : St. Louis, MO	25.272	3.361	Jan 2016	7.106	Jan 2017	6.109	Jan 2018	-		6.109	19.062	60.910	60.910
Systems Engineering - RMP	WR	NAWCWD : China Lake, CA	3.433	0.136	Nov 2015	0.505	Nov 2016	0.594	Nov 2017	-		0.594	Continuing	Continuing	Continuing
Systems Engineering - RMP	WR	NAWCAD : Patuxent River, MD	5.794	1.353	Nov 2015	1.423	Nov 2016	1.858	Nov 2017	-		1.858	Continuing	Continuing	Continuing
Systems Engineering - OFP	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.050	Nov 2016	0.025	Nov 2017	-		0.025	Continuing	Continuing	Continuing
Systems Engineering - RMP	WR	TBD : Other Gov	0.000	0.000		0.111	Jan 2017	0.113	Jan 2018	-		0.113	Continuing	Continuing	Continuing
Systems Engineering - OFP	TBD	TBD : TBD	0.000	0.000		0.050	Dec 2016	0.051	Dec 2017	-		0.051	Continuing	Continuing	Continuing
Prior year cost no longer funded in the FYDP	Various	Various : Various	43.965	0.000		0.000		0.000		-		0.000	0.000	43.965	-
		Subtotal	161.016	15.646		22.013		31.941		-		31.941	-	-	-

Remarks

1. FY18 increase to Primary Hardware Development (PHD) ELMP at ONTIC due to obsolescence efforts related to the engine accessories component improvement program.
2. FY17 increase to PHD OFP at NAWCWD China Lake due to ramp up of Link 16 integration efforts.
3. FY18 increase to PHD OFP at NAWCWD China Lake due to the start of Link 16 full integration capability development, as well as AIM-9X development as part of H7.0 OFP, while H6.2 Link 16 initial capability development is ongoing during FY18. As these two projects are in different stages of development during FY18, both efforts can be in work simultaneously. AIM-9X was not part of the H6.2 OFP.
4. FY17 PHD OFP at Raytheon necessary to begin development efforts for the integration and carriage of the AIM-9X aboard the AV-8B. FY18 increase to PHD OFP necessary to continue development efforts and begin certification efforts for the integration and carriage of the AIM-9X aboard the AV-8B.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604214N / *AV-8B Aircraft - Engine Dev*	Project (Number/Name) 0652 / *AV-8B*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

5. FY17 increase to Systems Engineering RMP due to FY17 efforts to develop pitot static probe, replacement canopy transparency and composite materials components. FY16 Systems Engineering RMP efforts were reprioritized to fund required AV-8B Flight Test Fixed costs at NAWCWD China Lake resulting in the requirement of increased engineering support to provide timely mitigation of these efforts in FY17.
6. FY18 increase to Systems Engineering RMP due to FY18 efforts to develop TAV-8B canopy replacement and Brake Fire Mitigation design development.
7. FY17 increase to Systems Engineering OFP due to ramp up of Link 16 integration efforts.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - OFP	WR	FST Cherry Pt : Cherry Point, NC	0.000	0.000		0.000		0.080	Nov 2017	-		0.080	Continuing	Continuing	Continuing
Software Development - RMP	C/CPFF	Boeing : St. Louis, MO	0.277	0.548	Jan 2016	0.318	Jan 2017	0.342	Jan 2018	-		0.342	2.146	3.631	3.631
Studies and Analysis - OFP	WR	NAWCWD : China Lake, CA	0.420	0.000		0.229	Nov 2016	0.232	Nov 2017	-		0.232	Continuing	Continuing	Continuing
Studies and Analysis - RMP	C/FFP	Boeing : St. Louis, MO	0.850	0.000		0.000		0.500	Dec 2017	-		0.500	3.590	4.940	4.940
Studies and Analysis - OFP	C/FFP	Boeing : St. Louis, MO	1.865	1.654	Jan 2016	0.000		1.000	Jan 2018	-		1.000	0.000	4.519	4.519
Studies and Analysis - OFP	MIPR	Eglin AFB : Valparaiso, FL	0.000	0.410	Oct 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior year cost no longer funded in the FYDP	Various	Various : Various	55.036	0.000		0.000		0.000		-		0.000	0.000	55.036	-
		Subtotal	58.448	2.612		0.547		2.154		-		2.154	-	-	-

Remarks

8. FY18 Development Support OFP at FST Cherry Point necessary to support AIM-9X development as part of H7.0 OFP.
9. Software Development RMP effort reflects continuing fatigue life tracking analyses and algorithm development.
10. FY17 increase to Studies and Analysis OFP at NAWCWD China Lake is for future capability expansion studies and analyses.
11. FY18 increase to Studies and Analysis RMP at Boeing is for the Fuselage Fatigue Life Assessment effort.
12. FY18 increase to Studies and Analysis OFP at Boeing is for future capability expansion studies and analyses to include integration of weapons such as Joint Standoff Weapons (JSOW).

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604214N / *AV-8B Aircraft - Engine Dev*	Project (Number/Name) 0652 / *AV-8B*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation - RMP	WR	NAWCWD : China Lake, CA	39.851	0.391	Jan 2016	0.051	Jan 2017	0.592	Jan 2018	-		0.592	Continuing	Continuing	Continuing
Developmental Test & Evaluation - OFP	WR	NAWCWD : China Lake, CA	13.362	2.867	Apr 2016	3.670	Jan 2017	5.744	Jan 2018	-		5.744	Continuing	Continuing	Continuing
Developmental Test & Evaluation - OFP	C/CPFF	Boeing : St. Louis, MO	0.000	0.000		1.439	Apr 2017	1.830	Apr 2018	-		1.830	0.000	3.269	3.269
Developmental Test & Evaluation - OFP	C/CPFF	Raytheon : Waltham, MA	0.000	0.000		1.266	Apr 2017	0.375	Apr 2018	-		0.375	0.000	1.641	1.641
Developmental Test & Evaluation - RMP	WR	FRC-E : Cherry Point, NC	0.170	0.023	Dec 2015	0.000		0.100	Dec 2017	-		0.100	Continuing	Continuing	Continuing
Developmental Test & Evaluation - RMP/OFP	Various	Various : Various	0.000	0.000		0.000		0.100	Jan 2018	-		0.100	Continuing	Continuing	Continuing
Operational Test & Evaluation - OFP	WR	COMOPTEVFOR : Norfolk, VA	23.258	0.237	Jan 2016	0.755	Jan 2017	0.762	Jan 2018	-		0.762	Continuing	Continuing	Continuing
Operational Test & Evaluation - OFP	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.130	Dec 2017	-		0.130	Continuing	Continuing	Continuing
Prior year cost no longer funded in the FYDP	Various	Various : Various	10.929	0.000		0.000		0.000		-		0.000	0.000	10.929	-
		Subtotal	87.570	3.518		7.181		9.633		-		9.633	-	-	-

Remarks

13. FY17 Developmental Test & Evaluation (DT&E) OFP at Boeing necessary for AIM-9X Ground Vibration Test efforts.
14. FY17 DT&E OFP at Raytheon for AIM-9X test efforts.
15. FY18 increase to DT&E RMP due to anticipated testing of hand operated strut, replacement canopy transparency and composite materials components.
16. FY17 increase to DT&E OFP efforts is to fund required AV-8B Flight Test Fixed costs at NAWCWD China Lake. FY18 increase to DT&E OFP efforts due to beginning of H7.0 DT that will now include AIM-9X testing starting in FY18.
17. FY17 increase to Operational Test & Evaluation (OT&E) OFP in FY17 for H7.0 OFP/Link 16 integration efforts to support unique flight testing and Link 16/H6.2/H7.0 efforts.
18. FY18 OT&E OFP at NAWCAD Patuxent River necessary to conduct testing on AIM-9X as part of H7.0 OFP.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604214N / *AV-8B Aircraft - Engine Dev*	Project (Number/Name) 0652 / *AV-8B*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering & Tec SRVC (Non-FFRDC) - RMP	C/CPFF	Engility : Chantilly, VA	0.517	0.249	Dec 2015	0.098	Dec 2016	0.100	Dec 2017	-		0.100	0.867	1.831	1.831
Engineering & Tec SRVC (Non-FFRDC) - ELMP	C/CPFF	Zenetex : Herndon, VA	1.856	0.995	Jun 2016	1.218	Jun 2017	1.162	Jun 2018	-		1.162	10.030	15.261	15.261
Engineering & Tec SRVC (Non-FFRDC)	C/CPFF	Various : Various	7.451	1.163	Dec 2015	1.074	Dec 2016	1.041	Dec 2017	-		1.041	8.987	19.716	19.716
Government Engineering Support - ELMP	WR	NAWCAD : Patuxent River, MD	6.507	1.462	Nov 2015	1.470	Nov 2016	1.425	Nov 2017	-		1.425	Continuing	Continuing	Continuing
Government Engineering Support - OFP	WR	NAWCAD : Patuxent River, MD	1.785	0.467	Nov 2015	0.697	Nov 2016	0.711	Nov 2017	-		0.711	Continuing	Continuing	Continuing
Government Engineering Support - ELMP	WR	NAWCWD : China Lake, CA	0.821	0.500	Dec 2015	0.027	Dec 2016	0.027	Dec 2017	-		0.027	Continuing	Continuing	Continuing
Government Engineering Support - OFP	Various	Various : Various	0.000	0.000		0.198	Jan 2017	0.202	Jan 2018	-		0.202	Continuing	Continuing	Continuing
MGT & PROF SUPPT SRVC (NON-FFRDC)	C/CPFF	Various : Various	8.663	0.171	Dec 2015	0.233	Dec 2016	0.237	Dec 2017	-		0.237	12.305	21.609	21.609
Travel	WR	Various : Various	1.269	0.156	Oct 2015	0.146	Oct 2016	0.147	Oct 2017	-		0.147	Continuing	Continuing	Continuing
Prior year cost no longer funded in the FYDP	Various	Various : Various	16.769	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	45.638	5.163		5.161		5.052		-		5.052	-	-	-

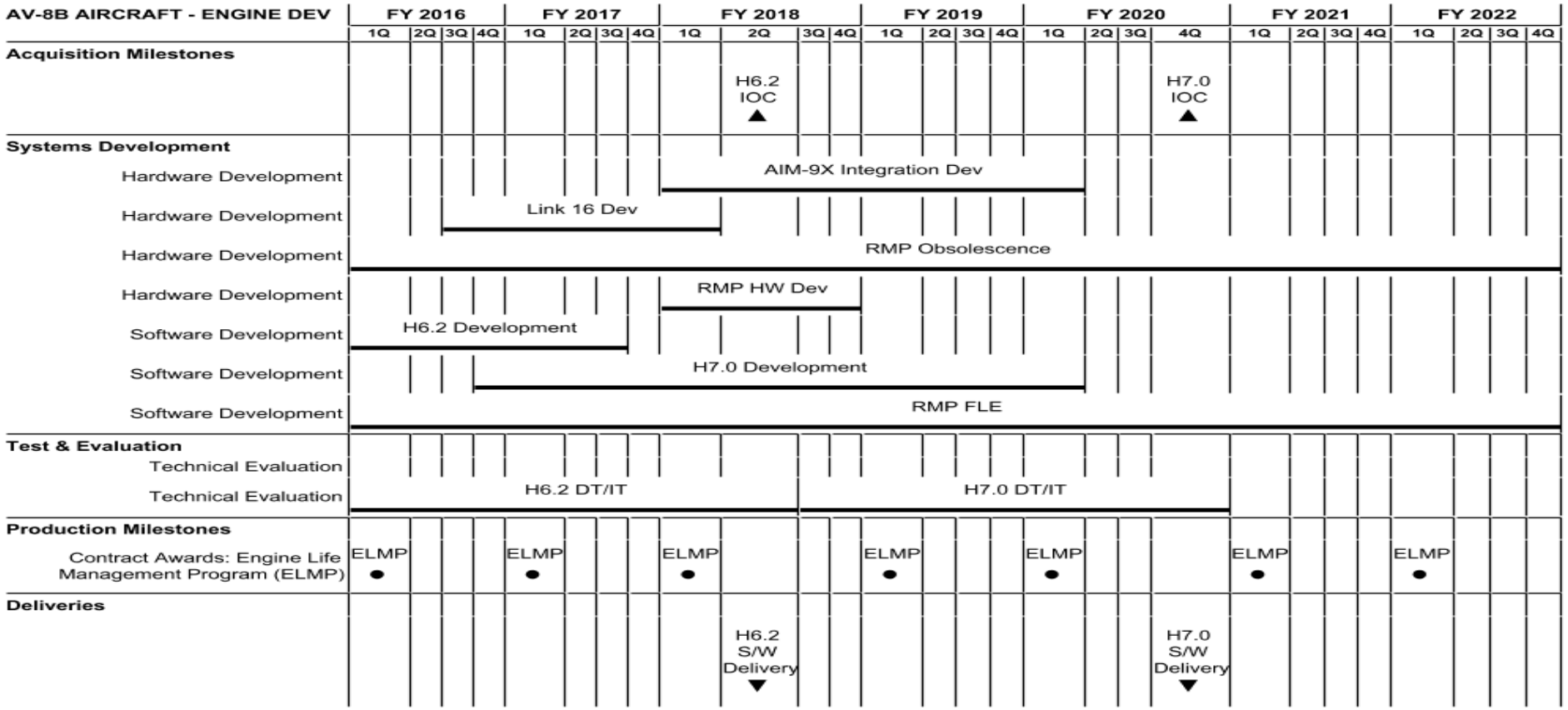
Remarks

19. FY17 increase to Government Engineering Support OFP at NAWCAD Patuxent River and Various due to ramp up of Link 16 integration efforts.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	352.672	26.939		34.902		48.780		-		48.780	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604214N / *AV-8B Aircraft - Engine Dev*	**Project (Number/Name)** 0652 / *AV-8B*



2018DON - 0604214N - 0652

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604214N / *AV-8B Aircraft - Engine Dev*	**Project (Number/Name)** 0652 / *AV-8B*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
AV-8B AIRCRAFT - ENGINE DEV				
Acquisition Milestones: H6.2 IOC	2	2018	2	2018
Acquisition Milestones: H7.0 IOC	4	2020	4	2020
Systems Development: Hardware Development: AIM-9X Integration Development	1	2018	1	2020
Systems Development: Hardware Development: Link 16 Development	3	2016	1	2018
Systems Development: Hardware Development: RMP Obsolescence Development	1	2016	4	2022
Systems Development: Hardware Development: RMP Hardware Dev	1	2018	4	2018
Systems Development: Software Development: H6.2 Development	1	2016	3	2017
Systems Development: Software Development: H7.0 Development	4	2016	1	2020
Systems Development: Software Development: RMP Fatigue Life Expended Development	1	2016	4	2022
Test & Evaluation: Technical Evaluation: H7.0 Link 16 DT/IT	3	2018	4	2020
Test & Evaluation: Technical Evaluation: H6.2 DT/IT	1	2016	2	2018
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY16	1	2016	1	2016
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY17	1	2017	1	2017
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY18	1	2018	1	2018
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY19	1	2019	1	2019
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY20	1	2020	1	2020
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY21	1	2021	1	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604214N / *AV-8B Aircraft - Engine Dev*	**Project (Number/Name)** 0652 / *AV-8B*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Milestones: Contract Awards: Engine Life Management Program (ELMP): ELMP Contract Award FY22	1	2022	1	2022
Deliveries: H6.2 S/W Delivery	2	2018	2	2018
Deliveries: H7.0 S/W Delivery	4	2020	4	2020

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604215N *I Standards Development*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	1,129.087	48.677	1.300	2.722	-	2.722	2.772	2.828	2.780	2.808	Continuing	Continuing
0572: *JT Service/NV Std Avionics CP/SB*	930.227	35.765	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	965.992
1857: *Calibration Standards*	14.146	1.653	1.300	2.722	-	2.722	2.772	2.828	2.780	2.808	Continuing	Continuing
2311: *Stores Planning and Weaponeering Module*	168.242	10.684	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	178.926
2312: *Common Helicopters*	16.472	0.575	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	17.047

Note

Starting in FY17 the Common Helicopters (PU 2312) and Stores Planning and Weaponeering Module (PU 2311) will be moved to Mission Planning PE (0605215N). Starting in FY17 the JT Service/NV Std Avionics CP/SB (PU 0572) PE (0604215N) will be moved to a new Common Avionics PE (0605217N).

A. Mission Description and Budget Item Justification

This project provides for the identification, study, design, development, demonstration, test, evaluation, and qualification of standard avionics capabilities for Navy use, and wherever practicable, use across all Services and Foreign Military Sales. Such air combat electronics developments include communications and airborne networking, navigation and sensors, flight avionics, safety systems, and flight mission information systems for both forward fit and retrofit aircraft. These efforts continue to maintain federated systems while encouraging transition of procurements to support a modular system for enhanced performance and affordability. Consideration is given up front to reduce acquisition costs through larger procurement quantities that satisfy multi-aircraft customer requirements and that reduce life cycle costs in the areas of reliability, maintainability, and training. This project also provides a Navy-wide program to develop required calibration standards (hardware) in all major measurement technology areas in support of Navy Hull, Mechanical and Electrical (HM&E) systems as well as Navy Weapons systems, ground and air, throughout the Fleet. It funds Navy lead-service responsibilities in the Department of Defense and Joint Services Metrology Research and Development program. This project supports the military requirement to verify the performance of all test systems used to validate the operation of HM&E as well as Navy Weapon Systems with calibration standards traceable to the National Institute of Standards and Technology.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production decision.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604215N *I Standards Development*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	53.049	1.300	1.913	-	1.913
Current President's Budget	48.677	1.300	2.722	-	2.722
Total Adjustments	-4.372	0.000	0.809	-	0.809
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-3.257	0.000			
• SBIR/STTR Transfer	-1.115	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.809	-	0.809

Change Summary Explanation

Technical: Not applicable.

Schedule:

0572:
Tactical Communications: Title corrected from Joint Precision Approach Landing System Software (S/W) Integration to Operation Flight Plan S/W Integration.

Ground Proximity Warning Systems/Terrain Awareness Warning System (GPWS/TAWS II): H-60 TAWS II Software Development extended duration from 4Q/15 through 4Q/16 based on projected platform integration schedule.

Military Flight Quality Assurance: Test and Evaluation, MH-53R/S, M/CH-53E, AH-1Z, UH-1Y, Phase 2 Test extended from 3Q/15 to 4Q/15 due to longer testing required for a number of defects found. Phase 2 Test Readiness Review moved from 1Q/15 to 3Q/15 due to integration test took longer than planned due to number of defects found. Deliveries for H-60R/S, CH-53E, AH-1Z and UH-1Y reflect new date of 2Q/15 to align with F/A-18 procurement order.

"Mid Air Collision Avoidance Capability: Re-planned FY16-FY21 program as a result of the Business Case Analysis to properly aligned program. Material Development Decision/Acquisition Strategy Review (MDD/ASR) moved from 2Q/16 to 1Q/17. Added Capability Development Document (CDD) Draft added in 4Q16. Added Requirements Development from 1Q/16 to 4Q/16.

Starting in FY17 the JT Service/NV Std Avionics CP/SB (PU 0572) PE (0604215N) will be moved to a new Common Avionics PE (0605217N).

2311:

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604215N *I Standards Development*

WASP V4.0 Systems Development start was delayed from 4Q16 to 2017 and will be displayed under PE 0605215N.

WASP V3.2 IOC was delayed from 1Q16 to 3Q16 due to the asynchronous release process and requirement for a new build prior to IOC.

FY17 and out schedule is included in the Mission Planning PE 0605215N.

2312:
Common Helicopters schedule FY17 and out is included in Mission Planning PE 0605215N.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604215N / *Standards Development*	Project (Number/Name) 0572 / *JT Service/NV Std Avionics CP/SB*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0572: *JT Service/NV Std Avionics CP/SB*	930.227	35.765	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	965.992
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Starting in FY17 the JT Service/NV Std Avionics CP/SB (PU 0572) PE (0604215N) will be moved to a new Common Avionics PE (0605217N).

A. Mission Description and Budget Item Justification

Joint Services/Navy Standard Avionics Components and Subsystems: This project provides for the identification, study, design, development, demonstration, test, evaluation, and qualification of standard avionics capabilities for Navy use, and wherever practicable, use across all Services and Foreign Military Sales. Standard avionics capabilities under development include the Joint Service Review Committee for Avionics Standardization (JSRC-AS), Communication Navigation Surveillance/ Air Traffic Management (CNS/ATM), Tactical Communications (TACCOM), Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II), Collaborative Warfare (CW), Avionics Component Improvement Program (AvCIP), Mid Air Collision Avoidance Capability (MCAC), and Avionics Architectures Team (AAT). Participation in Human Factors Quality Management Board ensures Navy safety upgrades and mandatory safety improvements for naval aircraft.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Joint Service Review Committee for Avionics Standardization (JSRC-AS)	0.607	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The JSRC-AS program supports Congressional and Assistant Secretary of the Navy for Research, Development and Acquisition direction to control the growing proliferation of unique avionics and improve coordination among the services through the identification, development, and promotion of investigative and development efforts across the services and U.S. Coast Guard. The JSRC-AS supports the development, analysis and review of new avionics requirements with potential for joint service application. The JSRC-AS consists of an O-6 Level principal from each service and U.S. Coast Guard, as well as the appropriate staff, to support joint service working group efforts. The JSRC-AS reports to the O-7 level tri-service Aviation Common Systems Board who reports to the O-9 level Joint Aeronautical Commanders Group.					
FY 2016 Accomplishments: Provide leadership in support of the Navy's interest to the JSRC-AS tri-service committee promoting commonality and joint programs with focus on interoperability, communications, navigation, Joint Services avionics obsolescence management, and update of the Core Avionics Master Plan.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) ***Articles:*** ***Description:*** This program will conduct and support CNS/ATM research, studies, development, integration, demonstration, test and evaluation efforts for naval aviation platforms in development. Platform integration of Mode Select (S), 8.33 kHz, Reduced Vertical Separation Minimum (RVSM), Required Navigation Performance Area Navigation (RNP/RNAV) to include M Code, and Automatic Dependent Surveillance-Broadcast Out (ADS-BO) functional integration and certification efforts into naval aircraft. Assist with insertion of communication, navigation, surveillance, and supporting technologies and conduct capability certification on developmental platforms such as F-35, CH-53K, and Unmanned Air Systems. Capabilities include Mode S, 8.33 kHz, RVSM, RNP/RNAV, ADS-BO, and other civil and military capabilities. ***FY 2016 Accomplishments:*** Assist with insertion and integration of CNS/ATM technologies and certification of developmental platforms. Evaluate ADS-B (Out) technologies and develop solutions to support platform integrations. Develop CNS/ ATM Common Components to support Required Navigation Performance Area Navigation (RNP RNAV) developmental platform requirements. Begin integration/certification of Mode Select, 8.33 kHz, Reduced Vertical Separation Minimum, RNP/RNAV, and ADS-B (Out) into CH-53K. Research and develop Global Positioning System (GPS) enhancements to support CNS/ATM RNP RNAV improvements. Research and develop Automatic Dependent Surveillance-Broadcast Out System Design Assurance requirements as well as compatibility with the emerging GPS M Code and its impact on RNP RNAV. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:***	0.455 -	0.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: Tactical Communications (TACCOM) ***Articles:***	13.108 -	0.000 -	0.000 -	0.000 -	0.000 -
Description: This program will conduct research, studies, development, integration, demonstration, test and evaluation efforts to ensure tactical communication systems and capabilities are developed and available to support naval aviation requirements. Perform tactical communication platform integration studies and activities to determine technical and cost effective solutions across naval aviation. Develop tactical communications (voice/data) requirements, concepts and systems which have application across naval aviation. Support all necessary tasks to ensure evolution of legacy communications systems incorporating programmable Communication Security/Information Assurance, mandated National Security Agency (NSA) Crypto Modernization initiatives, Combat Net Radio (CNR) Variable Message Format (VMF), Beyond Line-of-Sight, Satellite Communication (SATCOM) Modernization including Mobile User Objective System (MUOS), High Frequency, Second Generation Anti-Jam Tactical UHF Radio for NATO (SATURN) civil interoperability, and Joint Precision Approach Landing System (JPALS) data link into the ARC-210 system. Support for networking requirements development and prototyping, Integrated Waveform (IW), Intelligence Broadcast System over modern Code Division Multiple Access based satellite channels, Tactical Networks, Data Links, and Link 16. ***FY 2016 Accomplishments:*** Initiate Satellite Communications Modernization and continue development of Digital Interoperability SATCOM Software capability to include Mobile User Objective System (MUOS). Continue Joint Precision Approach Landing System Software integration with airborne capabilities for a common capabilities release. Initiate design of Crypto Engine. Complete Joint Interoperability Test Command certification to deliver VMF Software. Continue development of Air to Ground (VMF Software) Interoperability. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II) ***Articles:***	7.681 -	0.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: This program will conduct research, studies, development, integration, demonstration, test and evaluation efforts to meet naval aviation GPWS/TAWS II requirements. These requirements span all operational modes and operational environments, to include Degraded Visual Environment. Perform GPWS/TAWS II platform integration studies and activities to determine technical and cost effective solutions across naval aviation. Develop GPWS/TAWS II solutions tailored to platform performance and range of military operations. Develop simulation models for use at Manned Flight Simulator (MFS) or other simulation environments as required for platform tailoring, including procurement of test article hardware. Evaluate aircraft simulation models for suitability in Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II) development effort. Develop GPWS/TAWS II algorithms utilizing simulation environments as real-time hardware and pilot in the loop tool. Develop and evaluate algorithm interfaces necessary for integration of the algorithm within platform host computer. Develop software code to execute GPWS/TAWS II algorithm in host platforms. ***FY 2016 Accomplishments:*** Deliver formal software build of TAWS II system to H-60. Complete beta testing of TAWS II in Manned Flight Simulator or other simulation environment. Complete Phase 1 DT in MH-60R/S. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Collaborative Warfare (CW)	0.164	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The CW component is a Research & Development effort to identify targeting gaps and determine the warfighting benefit of integrating networked capabilities into naval aircraft to fill those gaps. The CW component also addresses targeting gaps for naval aircraft to operate more effectively with other military services. The following efforts are included: 1) A comprehensive naval aviation Tactical Networking Requirements Strategy that maps fleet gaps and requirements to cross-platform naval aviation solutions. The Naval Effects Cross Domain Targeting Capabilities Based Assessment concept refinement Joint Capability Integration Development System activity will be integrated into this effort. 2) Netted sensors proof of concept					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
prototype demonstrations leveraging the Navy's Fleet Experimentation campaign. 3) Support of integration of Netted Sensors/Sensor Fusion into naval aviation Integrated Capabilities Packages supporting multi-mission capability enhancements to include input to the N81 Offensive Anti-Surface Warfare Targeting and Weapons Control study that ensures naval aviation Intelligence, Surveillance and Reconnaissance delivers a complete kill chain. 4) Provide resource sponsor oversight on an Office of Naval Research Future Naval Capability Enabling Capability for an Advanced Tactical Data Link (ATDL) for naval aviation. 5) Continue work on the Joint Tactical Networking Concept of Employment (JTN CONEMP) that aligns Navy Advanced Tactical Data Link (ATDL) and Joint Aerial Layer Network - Maritime with USAF future strategies. ***FY 2016 Accomplishments:*** Continue executing tactical networking strategy activities to define future Program Objective Memorandums and analytic agendas. Develop requirements, standards, and architectures in support of new and updated netted-sensors' Concept of Operations and capabilities. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Avionics Component Improvement Program (AvCIP) ***Articles:*** ***Description:*** Investigate high value Return On Investment component improvement candidate projects in support of NAVAIR Commander's third focus area - Improve "capital A" Affordability. Stop operating and sustainment cost growth by reducing costs for fielded systems and implementing life-cycle cost reduction initiatives as part of new systems development. This program positions resources for next year application to fast-track corrections to existing problematic systems. Projects address critical readiness issues (significant back-orders or impending sustainability failures that threaten to down aircraft), functional performance obsolescence issues (system failing to support mission requirement), and top sustainment cost drivers (out of proportion annual maintenance or repair costs). Resources enable design and development of technology insertion and product redesign or replacement to meet readiness goals, meet mission objectives, or reduce overall sustainment costs. Candidate projects are submitted via a rigorous template, reviewed by a panel of Avionics professionals, and selected based upon urgency, warfighting contributions, breadth of application	3.040 -	0.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and scope of Return On Investment. Resources cover non-recurring engineering elements (including design and development, prototypes, platform integration, test and evaluation), program management and associated logistics elements (including technical data preparation, support equipment, provisioning, and training). Analysis shows that funding applied under this program between 2006 and 2014 will enable sustainment and procurement cost avoidances exceeding a five to one margin by 2025. ***FY 2016 Accomplishments:*** Address current fleet problem avionics systems (top readiness degraders, cost drivers, obsolescence-driven sustainability, capability loss, fleet head-hurters). ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Mid Air Collision Avoidance Capability (MCAC)	3.125	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: This program will conduct research, studies, and development, integration, demonstration, test and evaluation efforts to meet Naval Aviation MCAC requirements. These requirements span all operational modes and operational environments, to include Degraded Visual Environment. Perform MCAC platform integration studies and activities to determine technical and cost effective solutions across Naval Aviation. Develop MCAC solutions tailored to platform performance and range of military operations. Develop simulation models for use at Manned Flight Simulator (MFS) or other simulation environments as required for platform tailoring, including procurement of test article hardware. Evaluate aircraft simulation models for suitability in MCAC development effort. Develop MCAC solutions utilizing simulation environments as real-time hardware and pilot in the loop tools. Develop and evaluate interfaces necessary for integration of MCAC within platform host environment. ***FY 2016 Accomplishments:*** Begin requirements development and draft Capability Development Document (CDD). ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Avionics Architectures Team (AAT)	7.585	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The Avionics Architecture Team (AAT) provides hardware and software (HW/SW) standards and product line development and management for a common HW/SW operating environments to establish testable open architecture requirements in accordance with National Defense Authorization Act (NDAA) Section 801 Open Architecture language, DoD Directive 5000.1, N6/N7 Naval Open Architecture Requirements Letter 9010, Ser. N6N7/5U916276, and SECNAVINST 5000.2E. The Future Airborne Capability Environment (FACE) Technical Standard is developed through Navy, Army, Air Force, Industry and Academia collaboration in accordance with Public Law 104-113. The Hardware Open Systems Technologies (HOST) standard is being developed through government and academia collaboration and will be provided to industry for prototyping efforts. The AAT provides Subject Matter Experts to define and architect a set of Open Architecture Standards and product lines, design guidance, development and integration tools, acquisition strategy, contracting guidance and cost estimates. The results will enable Department of Defense (DoD) weapons systems to systematically reuse HW/SW and deliver scalable, portable and interoperable war fighting capabilities at a faster rate, reducing redundant development costs and increasing competition. Infrastructure components and frameworks built to these standards will support Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) capability upgrades on various platforms by enabling integration of common, non-proprietary applications. The AAT initiatives enable the government's role as Lead Systems Integrator, per the Weapons System Acquisition Reform Act (WSARA) 2009, and cost effectively manage data rights for reuse across the DoD. Future Airborne Capability Environment (FACE) Program Title changed to Avionics Architectures to define Naval open architecture that includes FACE and Hardware Open Systems Technologies (HOST). ***FY 2016 Accomplishments:*** Provide development support, mission based engineering, systems engineering and program management for design and acquisition strategy implementation guidance. Investigate revisions to the Future Airborne					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Capability Environment (FACE) and Hardware Open Systems Technologies (HOST) standards to meet emerging technologies and new platform requirements. Assist platforms with strategies for modular functional decomposition and implementation of FACE and HOST standards. Subject Matter Expert support for platform integration and competitive source selection. Academia prototyping and demonstration efforts for FACE and HOST initiatives. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	35.765	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0577: *Common Avionics Changes*	154.588	164.839	123.507	-	123.507	150.881	109.444	132.203	114.976	353.447	3,611.398

Remarks

D. Acquisition Strategy

Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) program is a system of systems. The program will encompass the integration of various systems which will be procured utilizing existing contracts for integration on forward-fit and retrofit platforms to provide CNS/ATM functionality. Tactical Communications (TACCOM) is utilizing a firm fixed price contract to Rockwell Collins for research and development of the ARC-210 Gen 5/6 and other Navy contract vehicles for integration studies. The Navy will integrate systems and components to satisfy platform requirements to achieve tactical communication capability as determined by analyses. Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II) Software Modules will be developed by a Government Software Product Team in collaboration with Industry where required. Avionics Component Improvement Program (AvCIP) will annually review, compete and select candidate component improvement proposals according to urgency, criticality of warfighting contributions, technical risk, breadth of application, and scope of Return On Investment (ROI). Projects are selected by a panel of Avionics management experts, including representatives from OPNAV N98, NAVAIR, NAVICP, and the Fleet. Projects are executed by managers in platform or commodity offices that own the component. The AvCIP program management team manages project selection, allocates funds, monitors multiple project executions against proposed spend plans, and tracks solution performance and achievement of projected ROIs over time using Fleet maintenance and component performance databases. Cost avoidances are coordinated with OPNAV N98 to balance Flying Hour Program costs. Component

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

improvement solutions include modular hardware, software and material upgrades. Resources cover engineering elements (including design and development, prototypes, platform integration, test and evaluation), program management and associated logistics elements (including technical data preparation, support equipment, provisioning, and training). Mid Air Collision Avoidance Capability (MCAC) is the capability umbrella which encompasses all systems designed and developed which aid in air-to-air collision avoidance. Systems include but are not limited to Traffic Collision Avoidance Systems and Mid Air Collision Avoidance Systems. Mid Air Collision Avoidance Capability Software Modules will be developed by a Government Software Product Team in collaboration with Industry where required. Avionics Architectures Team (AAT) will provide acquisition strategy guidance and support to platforms implementing open systems architectures to address open architecture requirements.

E. Performance Metrics

Joint Service Review Committee for Avionics (JSRC-AS) - Provide leadership in support of the Navy's interest to the JSRC tri-service committee promoting commonality and joint programs with focus on interoperability, communications, Communication Navigation Surveillance/Air Traffic Management (CNS/ATM), Joint Services avionics obsolescence management and the update of the Core Avionics Master Plan. Support and participate in Naval Aviation Requirements Group panels, Operational Advisory Group, and Human Factors Quality Management Board.
CNS/ATM - Successfully complete platform integration, test, and certifications.
Tactical Communications (TACCOM) - Achieve Joint Interoperability Test Command and National Security Agency certifications on system developmental efforts to meet operational requirements.
Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II) - Develop algorithm and software to meet platform specific requirements, successfully complete flight test, and deliver product on schedule. Successfully complete Milestone B.

Collaborative Warfare (CW) - Identify collaborative warfighting capability gaps and ensure the development of the most intelligent, cost effective, and timely solutions to fill those gaps.
Avionics Component Improvement Program (AvCIP) - Successful project competition and selection, execution of allocated funds, fielding of solutions, and documentation of component performance enhancement and benefits.
Mid Air Collision Avoidance Capability (MCAC) - Achieve program acquisition milestones on cost and schedule meeting platform requirements.
Avionics Architectures - Provide leadership in support of the Navy's interest to the Future Airborne Capability Environment (FACE) Consortium. Participate in technical and business working groups within the FACE Consortium to foster solutions that promote interoperable and integrated warfighting capability for all services. Successfully functionally decompose, prototype and demonstrate FACE conformant applications and FACE compatible operating environments. Develop technical specifications for Hardware Open System Technologies (HOST). Prototype and demonstrate HOST avionics components.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604215N / *Standards Development*	Project (Number/Name) 1857 / *Calibration Standards*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1857: *Calibration Standards*	14.146	1.653	1.300	2.722	-	2.722	2.772	2.828	2.780	2.808	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

OPNAV sponsored (by instruction), Navy-wide program which addresses Metrology related RDT&E issues for navy weapon systems, shipboard platforms, Naval Air, and Fleet Ground Marines. It supports development of calibration standards (equipment, procedures and technical data) required to resolve Metcal related safety, obsolescence, new and emerging technology support and cost reduction issues. It funds Navy unique and lead service responsibilities in DoD and Joint Services Metrology Research Programs to develop calibration solutions. The line supports development of measurement requirements to verify performance of all test systems used to validate the operation of Navy weapon Systems with calibration standards traceable to the National Institute of Standards and Technology to calibrate, sustain and ensure performance accuracy.

This program also provides benefits and efficiencies in a joint collaborative environment within the Tri-Services. Projects are identified and defined so that they will meet the universal requirement. Development efforts are integrated in order to achieve the common capabilities required at minimum cost. This is also a regular and common business practice within the Navy Metrology Community where R&D efforts are communicated and integrated into the multiple testing and Monitoring Systems. This is done in support of Program Managers, Sponsors, and Principle Executive officers. As a result, common requirements are established, duplication of efforts are eliminated, and best value, high quality Metcal products are produced for the Navy.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Calibration Standards	1.653	1.300	2.722	0.000	2.722
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					
($1.287) Continued development calibration standards in support of electro optical standards (hardware) in support of safety of flight operations.					
($.256) Continued development of calibration standards (hardware) in support of Physical Mechanical standards in support of Shipboard Flight Operations and NAVAIR Oxygen systems.					
($.110) Continued development of analytical metrology (processes) in support of automated interval and uncertainty analysis.					
FY 2017 Plans:					
($.755) Continue development calibration standards in support of electro optical standards (hardware) in support of safety of flight operations.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 1857 / *Calibration Standards*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
($.288) Continue development of calibration standards (hardware) in support of physical mechanical standards in support of Shipboard Flight Operations and NAVAIR Oxygen systems. ($.257) Continue development of analytical metrology (processes) in support of automated interval and uncertainty analysis. ***FY 2018 Base Plans:*** ($.860) Finish development and transition (1) calibration standard (hardware) and begin development of (2) calibration standards (hardware) in electro optical measurement technology to support safety of flight and operational readiness. ($.370) Continue the development of (1) calibration hardware standard and begin development of (1) calibration hardware standard for Chemical/Biological technology to support shipboard safety, safety of flight and Divers Life Support Systems (DLSS). ($.741) Continue development of (1) calibration standards (hardware) in physical mechanical measurement technology to support combat/operational readiness for submarine periscopes magnetic locks and aircraft tail hook non destructive testing, shipboard safety of flight and operational readiness, and component equipment operational readiness. ($.364) Continue development of (1) calibration standard and begin (1) calibration standard in analytical and metrology bench top technology in support of equipment operational readiness for both air and sea-based operations. ($.387) Begin development of (1) calibration standard (hardware) in electrical/electronic measurement technology to support shipboard and submarine operational safety. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.653	1.300	2.722	0.000	2.722

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 1857 / *Calibration Standards*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

Funds provide for in-service engineering initiation of metrology research and developmental efforts of unique non-commercial hardware standards in the development of six key thrust technological areas which correspond to Physical Mechanical, Electro-Optical, Analytical Metrology, Electrical/Electronic systems, Chembio Defense, Microwave/Millimeter wave. These standards will ensure measurement accuracy in advanced and emerging combat weapon systems and associated test equipment. These hardware test standards will also provide for cost effective and efficient system maintenance and calibration measurements that reduce wrong test decisions and will result in lower maintenance cost and higher system performance reliability.

E. Performance Metrics

The U.S. Navy Metrology RDT&E Program will transition and continue the research and development of 9 projects in progress of Electro Optical, Chemical/Biological, Physical Mechanical, Analytical Metrology, Electrical/Electronic, and technology areas for the purpose of ensuring measurement accuracy in new emerging technology measurement requirements of Navy weapon systems. Success measures will be articulated through program goals and a balance score card strategy system.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604215N / *Standards Development*	Project (Number/Name) 2311 / *Stores Planning and Weaponeering Module*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2311: *Stores Planning and Weaponeering Module*	168.242	10.684	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	178.926
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Starting in FY17, the Stores Planning and Weaponeering Module PU 2311 will be moved to Mission Planning PE (0605215N).

A. Mission Description and Budget Item Justification

The Naval Aircraft Weaponeering Components project, now referred to as the Weaponeering and Stores Planning (WASP) components, are integrated software products that allow aircrew to determine the best combinations of weapons and delivery conditions to achieve the desired level of target damage, eliminate weapon delivery solutions that violate aircraft Type/Model/Series (T/M/S) specific safety-of-flight envelopes, and perform detailed weapons employment planning. WASP is approved by Air Warfare Division (N98) as a flight clearance implementation system for the F/A-18 A, A+, B, C, D, D (RC), E, F, EA-18G; potential support for other platforms, to include F-35. WASP components will alert pilots if their planned weapon release conditions meet flight clearance limits, will result in bomb-to-bomb collisions, bomb-to-aircraft collisions, aircraft overstress, or excessive risk of aircraft loss/damage in the event of fuze early bursts. Weapon employment planning is fundamental to the Joint Capability Area of Force Application and joint mission areas of Strike and Amphibious Warfare. WASP provides the Navy and Marine Corp with weaponeering capabilities that are critical requirements for Interdiction, Armed Reconnaissance and Close Air Support mission planning. Therefore, WASP product availability is critical to successful employment of the Joint Mission Planning System (JMPS) for the F/A-18 A-F and EA-18G. The WASP product encompasses a multitude of Government Furnished Information software components and tools (aircraft target maneuver simulations, weapon flyout models, target probability of damage calculators). WASP products will require updates as emergent requirements for new aircraft T/M/S, stores and weapons are approved, and new flight clearances and flight restrictions are issued by Naval Air Systems Command Headquarters (NAVAIRSYSCOM).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development	4.248	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Includes associated system engineering design, development, installation, integration and software development for WASP components V3.0A, V3.1, V3.1A, V3.1B, V3.1C, V3.1D, V3.2, V3.2A, V3.2B, V3.3, V4.0 to support F/A-18 A-F; and V3.1 and later to support EA-18G. Naval Air Warfare Center Weapons Division (NAWCWD), Joint Software Support Activity (JSSA) will develop and maintain the AV-8B Weapons and Release Planning (WARP) tool. Define requirements to integrate WASP components into the JMPS. Provide domain engineering support for weapons separation, aircraft loads, flutter, fuzing and safe escape for application to WASP. Provide analysis of new requirements, allocation of requirements, design oversight, and life cycle					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 2311 / *Stores Planning and Weaponeering Module*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
management of the WASP program. Develop new aircraft configuration, aircraft loading, weapon optimization, store release and delivery planning components for F/A-18 A-F and EA-18G new flight clearances and flight restrictions issued by NAVAIRSYSCOM. Provide configuration management, system administration, quality assurance, documentation, metrics and software risk management for WASP. Acquire, integrate and modify numerous Government Furnished Information (GFI) software components and tools (aircraft target maneuver simulations, weapon flyout models, target probability of damage calculators, etc.) that are used for the WASP software development. Integrate WASP with Joint Standoff Weapon/Joint Direct Attack Munitions/Standoff Land-Attack Missile - Expanded Response and other weapons mission planning systems as required. ***FY 2016 Accomplishments:*** Complete development of V3.3, and release multiple database updates. Define V4.0 requirements which incorporates planned architectural updates, new weapon capabilities, and usability improvements. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Test and Evaluation (T&E) ***Articles:*** ***Description:*** Provide test and evaluation for unit and system level testing; functional qualification testing; safety of flight certification testing; integration and standards compliance testing for WASP versions V3.0A, V3.1, V3.1A, V3.1B, V3.1C, V3.1D V3.2, V3.2A, V3.2B and V3.3. Provide Joint Mission Planning System Mission Planning Environment Integration test support. Provide testing and test support to ensure all (to include internally developed software, externally developed GFI) components comply with Department of Navy (DoN) and Department of Defense (DoD) software mandates and directives. These include Integrated Shipboard Network System IT-21, DoD Information Assurance Certification and Accreditation Process, Navy Marine Corps Intranet (NMCI) and DoD Information Technology Portfolio Repository. All Fleet released software must comply with DoN and DoD software directives or will not be allowed to run on ship Local Area Networks or NMCI. ***FY 2016 Accomplishments:***	2.940 -	0.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 2311 / *Stores Planning and Weaponeering Module*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Complete test and evaluation of WASP major V3.3 in order to release to fleet in FY17. Complete test and evaluation of multiple database updates. Analyze test requirements. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Program Management/Systems Engineering ***Articles:*** ***Description:*** Provide program management and systems engineering support, which includes requirements definition and analysis, compliance with Naval Air Systems Command systems engineering technical review processes, Weaponeering and Stores Planning (WASP) acquisition documentation development and support, cost, schedule and performance management, contracting support (providing contract administration, preparing contract packages for award), compliance with external directives and providing financial support (accept, obligate, commit, and track funding). Provide travel for WASP Government personnel. Continue performing project management support for this program throughout the Future Years Defense Program/Plan. ***FY 2016 Accomplishments:*** Continue project management and systems engineering support to the WASP for future releases of WASP to the fleet. Additional support will be required for multiple database releases. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	3.496 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	10.684	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604215N / *Standards Development*	**Project (Number/Name)** 2311 / *Stores Planning and Weaponeering Module*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE/3858,5302,5380: *Air Force Mission Planning Systems*	55.835	78.323	75.567	-	75.567	75.113	87.771	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

Weaponeering and Stores Planning (WASP) products, delivered annually, were developed in-house by NAVAIR consisting of Naval Air Warfare Center Aircraft Division and Naval Air Warfare Center Weapons Division engineers and support contractors. The team has now migrated to a smaller government team that provides functional expertise in aircraft safety-of-flight (air-vehicle stores compatibility, weapons separation, aircraft aerodynamic flutter, ground/flight loads, authorized fuze arm times, aircraft safe escape), guided weapons employment and weapons effects against targets, with the majority of the software development conducted by various contractors. The Government, engineering, test, and support teams (test facilities, functional qualification testing and certification/accreditation test) are supplemented with contractor labor.

E. Performance Metrics

Average time to plan a flight: Threshold value is < 1 hour average time to plan a flight that includes full aircraft loadout and weapons delivery safe escape planning. Objective value is < 15 minutes average time to plan a flight that includes full aircraft loadout and weapons delivery safe escape planning. End product is a pilot's z-diagram knee board card.

Interoperability: Threshold value is 100% stand alone value.
Objective value is 100% stand alone value.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604215N / *Standards Development*	Project (Number/Name) 2312 / *Common Helicopters*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2312: *Common Helicopters*	16.472	0.575	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	17.047
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY17, the Common Helicopters (PU 2312) moved to Mission Planning PE (0605215N). Automated mission planning systems to date have focused on developing planning capabilities for fixed-wing aircraft, while the unique planning requirements for helicopters have not been fully addressed. The unique and enhanced automated mission planning requirements that must be developed and implemented for helicopters include: data loading, an enhanced route editor (serpentine routing, hover), manipulation of higher fidelity (smaller scale) maps and imagery, enhanced performance tools (performance in and out of ground effect, performance degradation due to atmospheric conditions & elevation), and enhanced fidelity of landing zone, target zone, and threat analyses. The following type/model/series aircraft are supported by this PU: AH-1W/Z, UH-1N/Y, H-46/E, H-53E, H-60H/R/S and V-22. Common helicopter functionality will be developed for implementation in Joint Mission Planning System (JMPS).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Common Helicopters	0.575	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Development of Common Helicopter functionality and integration with JMPS Framework Versions 1.3.5 and 64 bit Operating System. Common Components include Common Mission Data Loader (CMDL), Weapon Employment Zone Overlays Tool (WEZOT) and Point Selection Tool (PST). ***FY 2016 Accomplishments:*** Continue the development of the CMDL, WEZOT and PST to operate with next JMPS FW and 64 bit Operating System. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.575	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604215N / *Standards Development*	Project (Number/Name) 2312 / *Common Helicopters*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE/3858,5302,5380: *Air Force Mission Planning Systems*	55.835	78.323	75.567	-	75.567	75.113	87.771	0.000	0.000	Continuing	Continuing
• RDTE/2213: *Naval Mission Planning Systems*	38.993	21.779	21.570	-	21.570	21.477	21.335	21.782	22.216	Continuing	Continuing

Remarks

D. Acquisition Strategy

Not Applicable.

E. Performance Metrics

Export Mission Data to Data Transfer Device: Threshold value is < 12 minutes to transfer navigation, communication, weapon system initialization settings and intelligence data.

Interoperability: Threshold value is 100% of top level Information Exchange Requirements (IERs) designated critical will be satisfied. Objective value is 100% of top level IERs will be satisfied.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604216N *I Multi-Mssn Helicopter Upgrade Dev*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	1,555.085	17.518	5.275	5.371	-	5.371	2.549	2.551	2.604	2.655	Continuing	Continuing
1707: *MH-60 Development*	1,555.085	17.518	5.275	5.371	-	5.371	2.549	2.551	2.604	2.655	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 191												

Note

Commencing in FY 2017, this Program Element 0604216N, Project Unit 1707, changes from MH-60R Development to MH-60 Development to encompass both MH-60R and MH-60S activities.

A. Mission Description and Budget Item Justification

This Program Element includes funding for the development and support of future systems and improvements to current systems of the MH-60R/S. The MH-60R/S Multi-Mission helicopter provides battle group protection and adds significant capability in coastal littorals and regional conflicts. The MH-60R represents a significant avionics improvement to the H-60 series helicopters, greatly enhancing combat effectiveness in the primary mission areas of Anti-Submarine Warfare, Electronic Warfare, and Surface Warfare which includes the fast attack craft/fast in-shore attack craft (FAC/FIAC) threat response capabilities. Secondary MH-60R mission areas include search and rescue, vertical replenishment, naval surface fire support, logistics support, naval special warfare, strike warfare, personnel transport and medical evacuation. The MH-60S Multi-Mission helicopter conducts search and rescue, vertical replenishment, and airhead operations. Armed Helo and Airborne Mine Countermeasures (AMCM) were added as primary mission areas for the MH-60S as block upgrades to the platform. AMCM provides the Littoral Combat Ship the airborne portion of the Mine Countermeasures Mission Package. Armed Helo provides Special Warfare Support, Combat Search and Rescue, Surface Warfare and Maritime Interdiction Operations capability to address FAC/FIAC threat. MH-60S secondary roles include torpedo and drone recovery, noncombatant evacuation operations, and SEAL team and Explosive Ordnance Disposal support.

FY17 funding for active/passive aircraft survivability equipment Phases II and III were cancelled due to the Distributed Aperture Infrared Countermeasures MH-60 Joint Urgent Operational Needs. FY17 funding will be used for Very High Frequency Omni Ranging (VOR)/Instrument Landing System (ILS) validation/verification integration.

FY 2018 budget request funds VOR/ILS, System Configuration 18 and Service Life Assessment Program operational usage spectrum update to support fatigue life assessment of MH-60R aircraft structure and subsystem conditions. FY 2018 budget request also funds developmental activities including capability studies, open hardware and software architectures definition; avionics, mission system, air vehicle kinematic performance, and interoperability studies; and associated affordability studies in support of MH-60 Mid-Life Upgrade planning.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604216N *I Multi-Mssn Helicopter Upgrade Dev*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	18.858	5.275	4.089	-	4.089
Current President's Budget	17.518	5.275	5.371	-	5.371
Total Adjustments	-1.340	0.000	1.282	-	1.282
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.030	0.000			
• SBIR/STTR Transfer	-0.310	0.000			
• Program Adjustments	0.000	0.000	1.257	-	1.257
• Rate/Misc Adjustments	0.000	0.000	0.025	-	0.025

Change Summary Explanation

FY 2018 increase of $1.257M for an Usage Spectrum Update, Mid-Life Upgrade Studies, and System Configuration 18 testing activities that were not funded in the previous President's Budget.

Reprogramming decrease in FY 2016 of $1.030M due to cancellation of Active/Passive Aircraft Survivability efforts.

Schedule: Very High Frequency Omni Ranging/Instrument Landing System schedule delayed due to availability of personnel and changes to scope of the development effort.

Technical: Commencing in FY 2017, this Program Element 0604216N, Project Unit 1707, changes from MH-60R Development to MH-60 Development to encompass both MH-60R and MH-60S activities.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604216N / *Multi-Mssn Helicopter Upgrade Dev*				Project (Number/Name) 1707 / *MH-60 Development*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
1707: *MH-60 Development*	1,555.085	17.518	5.275	5.371	-	5.371	2.549	2.551	2.604	2.655	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 191

A. Mission Description and Budget Item Justification

The primary mission areas of the MH-60R include anti-submarine warfare, electronic warfare, and surface warfare which includes the Fast Attack Craft/Fast In-shore Attack Craft (FAC/FIAC) threat response capabilities. Secondary mission areas include search and rescue, vertical replenishment, naval surface fire support, logistics support, personnel transport and medical evacuation. The MH-60R is executing upgrades to communication, navigation, identification friend or foe, multi-spectral targeting system/forward looking infrared radar, automatic radar periscope detection and discrimination, weapons, data link, safety, maintenance, airframe and mission planning systems. Advanced Precision Kill Weapon System integration will support surface warfare and maritime interdiction operations by providing forward firing weapons, which includes rockets and anti-swarm weapons, by addressing the FAC/FIAC threat. Analyze the effectiveness of active/passive aircraft survivability equipment on the MH-60R by assessing the effectiveness of platform mission and susceptibility characteristics to include current/future Infrared Countermeasure systems, evaluating threat data (acquisition range and countermeasure effectiveness) and mission requirements, assessing mission effectiveness/ susceptibility trade-space for aircraft survivability equipment systems/improvements and recommend options for susceptibility/vulnerability reductions. The MH-60S Multi-Mission helicopter conducts search and rescue, vertical replenishment, and airhead operations. Armed Helo and Airborne Mine Countermeasures (AMCM) were added as primary mission areas for the MH-60S as block upgrades to the platform. AMCM provides the Littoral Combat Ship the airborne portion of the Mine Countermeasures Mission Package. Armed Helo provides Special Warfare Support, Combat Search and Rescue, Surface Warfare and Maritime Interdiction Operations capability to address FAC/FIAC threat. MH-60S secondary roles include torpedo and drone recovery, noncombatant evacuation operations, and SEAL team and Explosive Ordnance Disposal support. Very High Frequency Omni Ranging/Instrument Landing System(VOR/ILS) provides precision approach capability ashore and to supplement currently available Precision Approach Radar controlled approaches. MH-60R is the lead platform for integration of the Multifunctional Information Distribution System Low Volume Terminal Block Upgrade 2. The MH-60R Service Life Assessment Program (SLAP) is assessing the primary aircraft structure and subsystem condition of the MH-60R fleet in order to determine what modifications are necessary to extend the aircraft design life limits to allow it to meet Chief of Naval Operations operational inventory requirements through FY 2035. Without SLAP, aircraft are retired from the USN inventory when design service life limits are reached directly impacting fleet Anti-Submarine Warfare, Anti-Surface Warfare, Surveillance, Communications Relay, Naval Gunfire Support, Search and Rescue and logistics support.

FY 2018 budget request funds VOR/ILS, System Configuration 18 and SLAP operational usage spectrum update to support fatigue life assessment of MH-60R aircraft structure and subsystem conditions. Efforts include product development, government engineering, integrated logistics support, modeling and simulation and developmental and operational testing. FY 2018 budget request also fund developmental activities including capability studies, open hardware and software architectures definition; avionics, mission system, air vehicle kinematic performance, and interoperability studies; and associated affordability studies in support of MH-60 Mid-Life Upgrade planning.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604216N / *Multi-Mssn Helicopter Upgrade Dev*	**Project (Number/Name)** 1707 / *MH-60 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Avionics H/W and S/W Development	8.512	2.147	0.684	0.000	0.684
Articles:	-	-	-	-	-
Description: Supports aircraft integration, problem investigation and resolution, lab management and upgrades, hardware investigations, and repairs in support of the test program. Provides for integrated logistics support and program management board support and subvendor support. Avionics hardware and software development and integration to include: Pre-planned Product Improvements and automatic radar periscope detection and discrimination. Advanced Precision Kill Weapon System (APKWS) and active/passive self defense efforts address the Fast Attack Craft/Fast In-shore Attack Craft (FAC/FIAC) threat. Conduct FAC/FIAC demonstration utilizing anti-swarm weapon. Very High Frequency Omni Ranging (VOR)/Instrument Landing System (ILS) provides precision approach cabability.					
FY 2016 Accomplishments: Continue support of APKWS with the development of software for Multi Target Spectrum to improve FAC/FIAC solutions. Develop software for MH-60R, the lead platform for Multifunctional Information Distribution System Block Upgrade 2, in support of Battle Group Tactical Data Link Network Centric Warfare. Commence active/ passive aircraft survivability (in place of Helicopter Infrared Suppression System (HIRSS) due to incompatibility of HIRSS with MH-60R) and VOR/ILS activities.					
FY 2017 Plans: Continue VOR/ILS activities. Commence Service Life Assessment Program (SLAP) of MH-60R aircraft structure and subsystem conditions. Efforts include product development, government engineering, integrated logistics support, modeling and simulation and developmental and operational testing.					
FY 2018 Base Plans: Complete VOR/ILS activities and continue SLAP of MH-60R aircraft structure and subsystem conditions. VOR/ ILS efforts include government engineering, integrated logistics support, and developmental and operational testing.					
FY 2018 OCO Plans: N/A					
Title: Engineering and Logistics	1.659	1.447	1.702	0.000	1.702
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604216N / *Multi-Mssn Helicopter Upgrade Dev*	**Project (Number/Name)** 1707 / *MH-60 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to provide engineering specialists, integrated logistics support, government furnished equipment, support equipment, program management, contract support services, and travel to support APKWS and active/ passive aircraft survivability, and commence Very High Frequency Omni Ranging (VOR)/Instrument Landing System (ILS) engineering efforts and multifunctional information distribution system - low volume terminal block upgrade 2 modeling and simulation efforts. ***FY 2017 Plans:*** Continue to provide MH-60R engineering specialists, integrated logistics support, government furnished equipment, support equipment, program management, contract support services, and travel to support Very High Frequency Omni Ranging (VOR)/Instrument Landing System (ILS) engineering efforts. Analyze Fixed Forward Firing Weapons (FFFW)/Rockets and Advanced Precision Kill Weapon System (APKWS) mixed loads integration for Digital Rocket Launcher (DRL) on MH-60S. Commence Service Life Assessment Program (SLAP) of MH-60R aircraft structure and subsystem conditions. ***FY 2018 Base Plans:*** Continue to provide MH-60 engineering specialists, integrated logistics support, government furnished equipment, support equipment, program management, contract support services, and travel to support VOR/ ILS engineering efforts. Continue initial SLAP efforts to include operational usage spectrum update in support of initial fatigue life assessment. Commence MH-60 Mid-Life Upgrade capability studies and develop initial open architectures, avionics, mission system, and air vehicle development cost and schedule planning estimates. Commence System Configuration 18 engineering support and finish FFFW/Rockets and APKWS mixed loads integration for DRL on MH-60S. ***FY 2018 OCO Plans:*** N/A					
Title: Test and Evaluation	7.347	1.681	2.985	0.000	2.985
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue APKWS test and evaluation efforts. Commence VOR/ILS test and evaluation efforts and commence Multifunctional Information Distribution System-Low Volume Terminal Block Upgrade 2 modeling and simulation activities. ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604216N / *Multi-Mssn Helicopter Upgrade Dev*	**Project (Number/Name)** 1707 / *MH-60 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue MH-60R VOR/ILS test and evaluation efforts. Evaluate operational test results of MH-60S FFFW & APKWS mixed loads integration with DRL in counter Fast Attack Craft/Fast Inshore Attack Craft scenario and develop corrective action plans to address identified deficiencies in support of follow-on test. ***FY 2018 Base Plans:*** Commence System Configuration 18 test support and finish MH-60R Very High Frequency Omni Ranging/ Instrument Landing System (VOR/ILS)test and evaluation efforts. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	17.518	5.275	5.371	0.000	5.371

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN-1 BLI:018200: *MH-60R*	887.037	61.177	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	11,126.394
• APN-6 BLI:060510: *MH-60R spares*	1.023	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	300.454
• APN-5 BLI:053000: *SH60 Series*	37.644	63.771	50.088	-	50.088	40.582	54.529	38.370	34.003	Continuing	Continuing

Remarks

APN5/053000 reflects only MH-60R specific OSIP 001-06 funding.

D. Acquisition Strategy

Advanced Precision Kill Weapon System and VOR/ILS will be developed using cost plus incentive fee type contracts.

E. Performance Metrics

Successfully support developmental and operation test activities to qualify aircraft modifications/upgrades.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604216N / *Multi-Mssn Helicopter Upgrade Dev*	**Project (Number/Name)** 1707 / *MH-60 Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw/SW Dev, Advanced Precision Kill Weapon System (APKWS)	SS/CPIF	Lockheed Martin : Owego, NY	5.076	0.000		0.000		0.000		-		0.000	0.000	5.076	5.076
Primary Hdw Dev. APKWS	SS/CPIF	Sikorsky : Stratford, CT	0.225	0.000		0.000		0.000		-		0.000	0.000	0.225	0.225
Primary SW Dev. Fast Attack Craft/Fast In-Shore Attack Craft (FAC/FIAC) demo	SS/BOA	Lockheed Martin : Owego, NY	3.058	2.498	Mar 2016	0.037	Mar 2017	0.000		-		0.000	0.000	5.593	5.593
Primary SW Dev. FAC/ FIAC	SS/BOA	Raytheon : McKinney, TX	0.000	0.957	May 2016	0.000		0.000		-		0.000	0.000	0.957	0.957
Primary Hdw/SW Dev, Instrument Landing System	SS/CPFF	Lockheed Martin : Owego, NY	0.000	1.249	Oct 2016	0.627	Oct 2017	0.000		-		0.000	0.000	1.876	1.876
Primary Hdw/SW Dev, Instrument Landing System	SS/CPIF	Sikorsky : Stratford, CT	0.000	1.808	Apr 2017	0.592	Apr 2018	0.000		-		0.000	0.000	2.400	2.400
Primary HDW/SW Dev, Usage Spectrum Update	SS/CPIF	Sikorsky : Stratford, CT	0.000	0.000		0.000		0.684	Apr 2018	-		0.684	0.000	0.684	0.520
Primary Hdw Dev, Multifunctional Information Distribution System - Low Volume Terminal Block Upgrade	SS/CPFF	Lockheed Martin : Owego, NY	0.000	2.000	Apr 2016	0.000		0.000		-		0.000	0.000	2.000	2.000
Prior year Product Dev Cost no longe funded in the FYDP	Various	Various : Various	1,157.533	0.000		0.000		0.000		-		0.000	0.000	1,157.533	-
Primary Hdw Dev, Avionics FFFW	MIPR	Army, DOTC : Picatinny, NJ	0.000	0.000		0.891	Jan 2017	0.000		-		0.000	0.000	0.891	-
		Subtotal	1,165.892	8.512		2.147		0.684		-		0.684	0.000	1,177.235	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604216N / *Multi-Mssn Helicopter Upgrade Dev*	**Project (Number/Name)** 1707 / *MH-60 Development*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support, Projects commencing prior to FY16	WR	NAWC AD : Patuxent River, MD	12.954	1.197	Nov 2015	0.960	Dec 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Government eng spt, Very High Frequency Omni Ranging/Instrument Landing Sysem (VOR ILS)	Various	Various : Various	0.000	0.000		0.326	Dec 2016	0.250	Nov 2017	-		0.250	Continuing	Continuing	Continuing
Government eng spt, Active/Passive Aircraft Survivability	WR	Various : Various	0.000	0.423	Nov 2015	0.000		0.000		-		0.000	0.000	0.423	-
Government eng spt, Usage Spectrum Update	C/BA	TBD : TBD	0.000	0.000		0.000		0.920	Nov 2017	-		0.920	0.000	0.920	-
Prior year support cost no longer funded in the FYDP	Various	Various : Various	148.770	0.000		0.000		0.000		-		0.000	0.000	148.770	-
MH-60S Forward Firing Weapons/Rockets Government Engineering Support	Various	Various : Various	0.000	0.000		0.107	Dec 2016	0.225	Dec 2017	-		0.225	0.000	0.332	-
Government Eng Support , System Configuration 18	Various	Various : Various	0.000	0.000		0.000		0.057	Nov 2017	-		0.057	0.000	0.057	-
Government Eng Support, Mid-Life Upgrade	Various	Various : Various	0.000	0.000		0.000		0.200	Nov 2017	-		0.200	0.000	0.200	-
		Subtotal	161.724	1.620		1.393		1.652		-		1.652	-	-	-

Remarks

1. FY 2016 costs for government engineering support for projects commencing prior to FY 2016 include automatic radar periscope detection and discrimination and advanced precision kill weapon system.
2. FY 2017 Very High Frequency Omni Ranging/Instrument Landing System decrease cost to observe the qualification kit installation at Naval Air Station (NAS) Patuxent River, Maryland and NAS North Island, California.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604216N / *Multi-Mssn Helicopter Upgrade Dev*	**Project (Number/Name)** 1707 / *MH-60 Development*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E), Projects commencing prior to FY16	WR	NAWC AD : Patuxent River, MD	160.600	7.298	Nov 2015	0.572	Feb 2017	0.000		-		0.000	0.000	168.470	-
Operation Test & Evaluation (OT&E),Projects commencing prior to FY16	WR	COMOPTEVFOR : Norfolk, VA	15.396	0.049	Feb 2016	0.002	Mar 2017	0.000		-		0.000	0.000	15.447	-
Developmental Test & Evaluation (DT&E), Very High Frequency Omni Ranging (VOR)/Instrument Landing System (ILS)	WR	NAWC AD : Patuxent River, MD	0.000	0.000		0.051	Feb 2017	0.410	Nov 2017	-		0.410	0.840	1.301	-
OT&E, VOR/ILS	WR	COMOPTEVFOR : Norfolk, VA	0.000	0.000		0.000		0.410	Nov 2017	-		0.410	0.283	0.693	-
Prior year T&E costs no longer funded in the FYDP	Various	various : various	12.280	0.000		0.000		0.000		-		0.000	0.000	12.280	-
DT&E, System Configuration 18	Various	Various : Various	0.000	0.000		0.000		1.165	Nov 2017	-		1.165	0.000	1.165	-
DT&E, MH-60S Forward Firing Weapons/Rockets	Various	Various : Various	0.000	0.000		1.056	Mar 2017	1.000	Nov 2017	-		1.000	0.000	2.056	-
		Subtotal	188.276	7.347		1.681		2.985		-		2.985	1.123	201.412	-

Remarks

1. Commencing in FY 2016 test and evaluation costs will be broken out by individual project. FY 2016 costs for test and evaluation supports Advanced Precision Kill Weapon System (APKWS).
2. FY 2018 costs for test and evaluation supports commencement of VOR/ILS development test and operational test activities.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604216N / *Multi-Mssn Helicopter Upgrade Dev*	Project (Number/Name) 1707 / *MH-60 Development*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	WR	NAWC AD : Patuxent River, MD	4.937	0.039	Nov 2015	0.054	Oct 2016	0.050	Nov 2017	-		0.050	0.174	5.254	-
Prior year Mgmt Serv cost no longer funded in the FYDP	Various	Various : Various	34.256	0.000		0.000		0.000		-		0.000	0.000	34.256	-
		Subtotal	39.193	0.039		0.054		0.050		-		0.050	0.174	39.510	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,555.085	17.518		5.275		5.371		-		5.371	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604216N / *Multi-Mssn Helicopter Upgrade Dev*	**Project (Number/Name)** 1707 / *MH-60 Development*

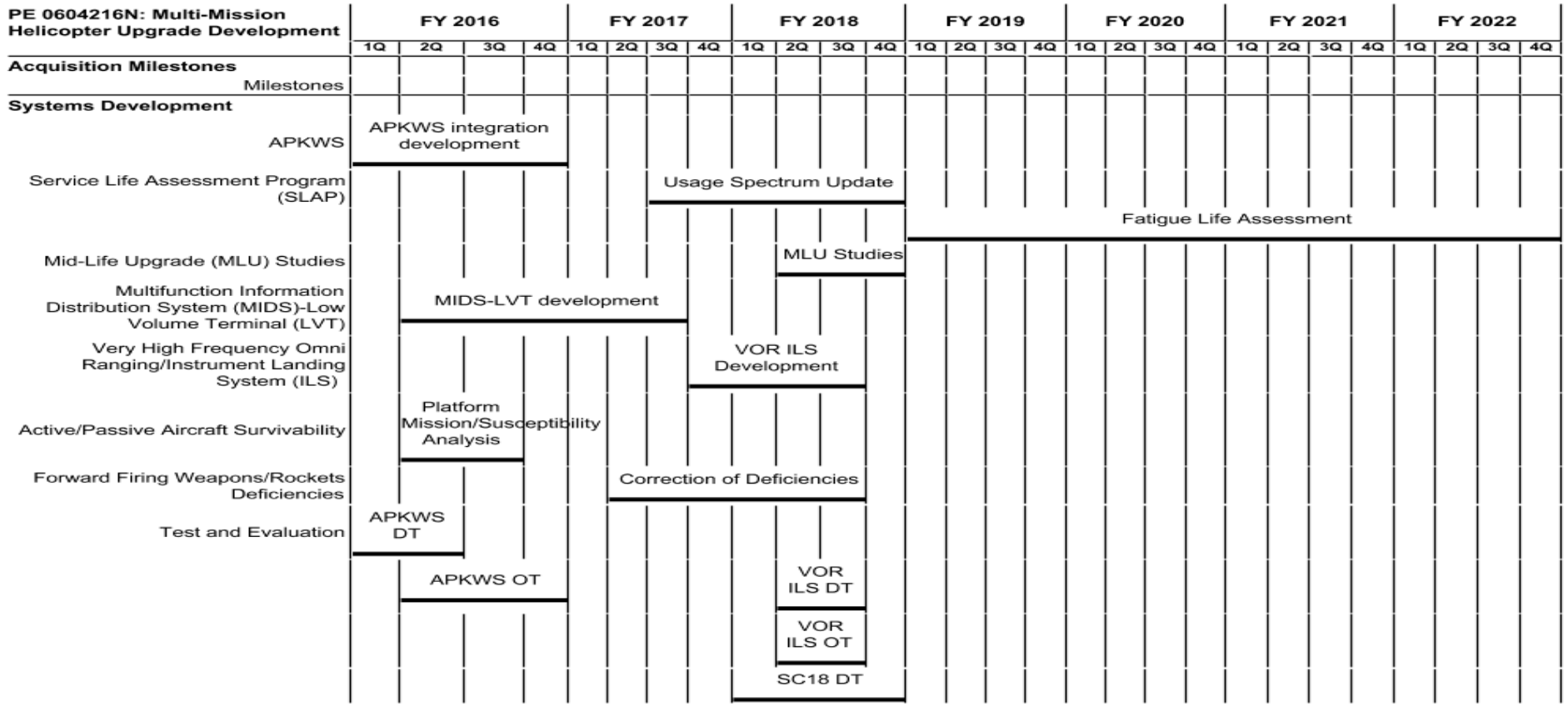

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604216N / *Multi-Mssn Helicopter Upgrade Dev*	**Project (Number/Name)** 1707 / *MH-60 Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
PE 0604216N: Multi-Mission Helicopter Upgrade Development				
Systems Development: APKWS: APKWS integration development	1	2016	4	2016
Systems Development: Service Life Assessment Program (SLAP): Usage Spectrum Update	3	2017	4	2018
Systems Development: Fatigue Life Assessment	1	2019	4	2022
Systems Development: Mid-Life Upgrade (MLU) Studies: MLU Studies	2	2018	4	2018
Systems Development: Multifunction Information Distribution System (MIDS)-Low Volume Terminal (LVT): Block Upgrade 2 Integration	2	2016	3	2017
Systems Development: Multifunction Information Distribution System (MIDS)-Low Volume Terminal (LVT): Schedule Detail	1	2016	1	2022
Systems Development: Very High Frequency Omni Ranging/Instrument Landing System (ILS): ILS integration	4	2017	3	2018
Systems Development: Active/Passive Aircraft Survivability: Phase I - Platform Mission and Susceptibility Analysis	2	2016	3	2016
Systems Development: Forward Firing Weapons/Rockets Deficiencies: Correction of Deficiencies	2	2017	3	2018
Systems Development: Test and Evaluation: APKWS DT	1	2016	2	2016
Systems Development: Test and Evaluation: APKWS OT	2	2016	4	2016
Systems Development: Test and Evaluation: VOR ILS DT	2	2018	3	2018
Systems Development: Test and Evaluation: VOR ILS OT	2	2018	3	2018
Systems Development: Test and Evaluation: System Configuration 18 (SC18)	1	2018	4	2018

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604218N *I Air/Ocean Equipment Engineering*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	81.339	4.406	3.875	0.782	-	0.782	0.690	0.719	0.739	0.747	Continuing	Continuing
2345: *Fleet METOC Equipment*	58.719	3.281	2.692	0.782	-	0.782	0.690	0.719	0.739	0.747	Continuing	Continuing
2346: *METOC Sensor Engineering*	22.620	1.125	1.183	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	24.928

A. Mission Description and Budget Item Justification

The Air/Ocean Equipment Engineering (AOEE) Program Element provides new capabilities to support naval combat forces. This program engineers and developmentally tests organic and remote sensors, communication interfaces, and processing and display devices. This equipment is engineered to measure, ingest, store, process, distribute and display conditions of the physical environment that are essential to the optimum employment and performance of naval warfare systems. AOEE also engineers capabilities for shipboard and shore-based tactical systems. A major area of focus for the AOEE program is to provide the engineering development of specialized equipment and measurement capabilities that are intended to monitor specific conditions of the physical environment in hostile and remote areas in response to fleet demand signals for increased sensing capability and capacity to support battlespace collections and prediction on short to intermediate time scales. With such capabilities, the war fighters' situational awareness of the operational effects of the physical environment are made more certain.

Major emphasis is on the Meteorological and Oceanographic Future Mission Capabilities (METOC FMC) project.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	4.515	3.875	4.563	-	4.563
Current President's Budget	4.406	3.875	0.782	-	0.782
Total Adjustments	-0.109	0.000	-3.781	-	-3.781
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.109	0.000			
• Program Adjustments	0.000	0.000	-3.827	-	-3.827
• Rate/Misc Adjustments	0.000	0.000	0.046	-	0.046

Change Summary Explanation

Decrease in FY18 funding for Fleet METOC Equipment is a result of a realignment from Research and Development (RDT&E,N) to Other Procurement, Navy (OP,N), BLI 4226 Littoral Battlespace Systems -Autonomous Unmanned Vehicle, Submarine Variant (LBS-AUV(S)).

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*	Project (Number/Name) 2345 / *Fleet METOC Equipment*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2345: *Fleet METOC Equipment*	58.719	3.281	2.692	0.782	-	0.782	0.690	0.719	0.739	0.747	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides for the engineering and manufacturing development of sensors, communication interfaces, processing and display meteorological and oceanographic (METOC) equipment. This equipment is designed to provide future mission capabilities for war fighters to measure, ingest, store, process, distribute and display METOC parameters and derived products.

This project also exploits new government off-the-shelf /commercial off-the-shelf technologies, tactical sensors and web enablement for the Navy's computer-based tactical shipboard and shore capability used to predict and assess the operational effects of the physical environment on the performance of platforms, weapons and sensor systems. This project includes development of warfare specific mission planning modules to support unmanned systems with integration of data from environmental and tactical sensor systems, model forecast information and Geospatial Information & Services Databases. This project also supports development of autonomous environmental sensing systems for situational awareness and tactical decision aid/mission planner support, as well as iridium and advanced satellite communication integration in METOC sensor, vehicle control and mission planning systems that will be required to achieve Chief of Naval Operation objectives for information dominance and decision superiority.

Major emphasis areas include the Meteorological and Oceanographic Future Mission Capabilities (METOC FMC) project, Littoral Battlespace Sensors - Unmanned Undersea Vehicles (LBS-UUV) and the Environmental Satellite Receiver Processor (ESRP) (comprised of AN/SMQ-11 (sea and shore configuration) and AN/FMQ-17 (shore configuration)) program.

FY 2018 request provides for the Littoral Battlespace Sensors - Gliders (LBS-G) and Littoral Battlespace Sensors - Autonomous Undersea Vehicles (LBS-AUV) engineering design studies as well as the development of Engineering Change Proposals (ECP's) for any identified software and or hardware deficiencies. FY18 request also provides for continued investigation of next generation propulsion technologies.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Meteorological and Oceanographic (METOC) Future Mission Capabilities (FMC)	2.861	0.470	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued advanced METOC infrastructure development for METOC decision support software applications and interfaces to tactical and strategic decision aids along with component and prototype efforts associated with acquiring environmental data. Continued development of an end-to-end methodology to collect, fuse, and					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
integrate these data into Navy and DoD networks and command & control nodes. Continued development of support infrastructure for advanced global & regional Meteorological Oceanographic (METOC) prediction systems. Began the Dual Band (air surveillance) Radar design and development for the new weather radar processing and display software for CVN 78 class ships. ***FY 2017 Plans:*** Advanced software tools development for METOC asset allocation, METOC decision support software applications, and interfaces to tactical and strategic decision aids along with component and prototype efforts associated with acquiring environmental data. Development of an end-to-end methodology to collect, fuse, and integrate these data into Navy and DoD networks and command & control nodes. Development of support infrastructure for advanced global & regional METOC prediction systems. The Navy decided to discontinue the FMC project label, starting in 2018. This was done as part of an effort to restructure METOC research and development funding into the Tasking, Collection, Prediction, Exploitation, and Dissemination (TCPED) construct coming into common use throughout Naval Information Forces. This restructuring for FY18 moves all METOC RDT&E into PE 0603207N. FY2017 FMC efforts will be remapped to TCPED based projects in FY2018. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Littoral Battlespace Sensors - Unmanned Undersea Vehicle (LBS-UUV)	0.138	1.957	0.463	0.000	0.463
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Conducted Littoral Battlespace Sensors - Gliders (LBS-G) and Littoral Battlespace Sensors - Autonomous Undersea Vehicles (LBS-AUV) engineering design studies as required. Developed system upgrades via Engineering Change Proposals (ECP's) to correct any identified software and hardware deficiencies. Continued efforts on AUV autonomy. Continued Glider Operations Center (GOC) automation efforts and battery redesign investigations. Began investigating next generation propulsion technologies such as the Hybrid Thruster, battery chemistry, thermal engines, and universal buoyancy engines for potential system upgrades as directed. ***FY 2017 Plans:*** Conduct LBS-G and LBS-AUV engineering design studies as required. Develop LBS-AUV submarine variant technical data package for sensor payloads. Develop system upgrades via ECPs and correct any identified					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
software and/or hardware deficiencies as required. Continue efforts on AUV autonomy. Continue GOC automation efforts. Continue investigating next generation propulsion technologies such as the Hybrid Thruster, battery chemistry, thermal engines, and universal buoyancy engines for potential system upgrades. ***FY 2018 Base Plans:*** Conduct Littoral Battlespace Sensors - Gliders (LBS-G) and Littoral Battlespace Sensors - Autonomous Undersea Vehicles (LBS-AUV) engineering design studies. Develop system upgrades via Engineering Change Proposals (ECP's) and correct any identified software and/or hardware deficiencies. Continue investigating next generation propulsion technologies such as Hybrid Thruster, battery chemistry, thermal engines, and universal buoyancy engines for potential system upgrades. ***FY 2018 OCO Plans:*** N/A					
Title: Environmental Satellite Receiver Processor (ESRP)	0.282	0.265	0.319	0.000	0.319
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued to develop and test annual hardware and software upgrades to integrate new METOC Satellite Sensors available in the Geostationary Operational Environmental Satellites (GOES) and Polar Orbiting Environmental Satellites (POES). Continued integration of ESRP systems in support of Joint Polar Satellite System (JPSS) and Europe Meteorology Satellites (EUMETSAT). Overall program efforts included investigation of emerging technologies through study, development and associated testing for feasibility of program insertion. ***FY 2017 Plans:*** Continue to develop and test annual hardware and software upgrades to integrate new METOC Satellite Sensors available in the GOES and the POES. Continue integration of ESRP systems in support of JPSS, and EUMETSAT. Overall program efforts include investigation of emerging technologies through study, development and associated testing for feasibility of program insertion. ***FY 2018 Base Plans:*** Continue to develop and test annual hardware and software upgrades to integrate new METOC Satellite Sensors available in the GOES and the POES. Continue integration of ESRP systems in support of Defense Weather Satellite System (DWSS), which has replaced JPSS, and EUMETSAT. Overall program efforts include					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
investigation of emerging technologies through study, development and associated testing for feasibility of program insertion. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	3.281	2.692	0.782	0.000	0.782

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/4226: *Meteorological Equipment*	14.997	29.253	21.137	-	21.137	21.669	40.947	46.331	26.091	Continuing	Continuing
• RDTEN/0603207N/2341: *METOC Data Acquisition*	3.733	4.437	5.483	-	5.483	5.283	5.300	5.405	5.513	Continuing	Continuing
• RDTEN/0603207N/2342: *METOC Data Assimilation and MOD*	16.174	20.165	21.111	-	21.111	21.407	21.734	22.211	22.676	Continuing	Continuing
• RDTEN/0604218N/2346: *METOC Sensor Engineering*	1.125	1.183	0.000	-	0.000	9.933	0.000	0.000	0.000	0.000	34.861

Remarks

D. Acquisition Strategy

Acquisition, management and contracting strategies are to support engineering and manufacturing development by providing funds to Naval Research Laboratories and miscellaneous contractors, with management oversight by the Office of Naval Research.

E. Performance Metrics

Goal: Develop and engineer equipment to acquire meteorological and oceanographic (METOC) data in order to improve the accuracy of global and regional scale Meteorological and Oceanographic forecast models.
Metric: Tasks will address no less than 75% of applicable capability gaps and requirements, as identified by Resource and Requirements Sponsor(s). As tasks relate to exploitation of fleet sensors for METOC data (Through-the-Sensor), no less than 80% of approved initiatives will maintain cost, schedule, performance and transition risk analysis certification that will have been completed within the past 12 months.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*	Project (Number/Name) 2346 / *METOC Sensor Engineering*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2346: *METOC Sensor Engineering*	22.620	1.125	1.183	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	24.928
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides for the engineering and manufacturing development of specialized, high resolution instrumentation systems and measurement capabilities for obtaining near real-time, in-situ Meteorological and Oceanographic (METOC) data in hostile, remote, and denied areas. The project's objectives are to engineer near term future mission sensing capabilities that are intended to survive the harsh littoral and deep-strike environments and also to meet demanding requirements for timeliness and accuracy. Engineering is performed within this project to ensure that air and safety certification for deployment from fleet aircraft or ships is met and that the proper data formats are engineered for electronic communications transmissions, human interface displays, and inputs to predictive models. The major area of emphasis is the METOC Future Mission Capabilities (FMC) project.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Meteorological and Oceanographic (METOC) Future Mission Capabilities (FMC)	1.125	1.183	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The Navy decided to discontinue the FMC project label, starting in 2018. This was done as part of an effort to restructure METOC research and development funding into the Tasking, Collection, Prediction, Exploitation, and Dissemination (TCPED) construct coming into common use throughout Naval Information Forces. This restructuring for FY18 moves METOC RDT&E into PE 0603207N.					
FY 2016 Accomplishments: Systems development of METOC manned, unmanned and automated sensing technologies (to include integration of environmental sensors into a larger environmental sensing strategy). Continued the development of advanced sensor system support technologies and techniques for sensor deployment, data processing and analysis to include performance metrics to optimize sensor performance. Continued to develop infrastructure to acquire, process and distribute METOC data and products. Additionally, FY16 funding assessed new sensor capabilities.					
FY 2017 Plans: Continue system development and demonstration of METOC manned, unmanned and automated sensors (to include integration of environmental sensors into a larger environmental sensing strategy). Continue the development of advanced sensor system support technologies and techniques for sensor deployment,					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2346 / *METOC Sensor Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
data processing and analysis to include performance metrics to optimize sensor performance. Assess viability of sensors and subsystem sensors on unmanned and manned aircraft systems and autonomous undersea systems for collection of automated Meteorological and Oceanographic (METOC) data. Continue the development infrastructure to acquire, process and distribute METOC data and products. Assess improved sensor capabilities for unmanned and manned aircraft systems and autonomous undersea systems. The Navy has decided to discontinue the FMC project label, starting in 2018. This was done as part of an effort to restructure METOC research and development funding into the Tasking, Collection, Prediction, Exploitation, and Dissemination (TCPED) construct coming into common use throughout Naval Information Forces. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.125	1.183	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTEN/0603207N/2341: *METOC DATA ACQUISITION*	3.733	4.437	5.467	-	5.467	5.316	5.341	5.447	5.556	Continuing	Continuing
• RDTEN/0603207N/2342: *METOC DATA ASSIMILATION AND MOD*	16.173	20.165	19.997	-	19.997	20.869	21.221	21.698	22.162	Continuing	Continuing
• RDTEN/0604218N/2345: *FLEET METOC EQUIPMENT*	3.281	2.692	0.736	-	0.736	0.723	0.691	0.704	0.718	Continuing	Continuing

Remarks

D. Acquisition Strategy

Acquisition and contracting strategies are to support engineering and manufacturing development of specialized, high resolution instrumentation systems and measurement techniques for obtaining near real-time in-situ Meteorological and Oceanographic (METOC) data in denied or remote areas by providing funds to miscellaneous performers.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2346 / *METOC Sensor Engineering*

E. Performance Metrics

Goal: Develop and engineer unique sensors to acquire METOC data in order to improve the accuracy of global and regional scale meteorological and oceanographic forecast models. Metric: Tasks will address no less than 75% of applicable capability gaps and requirements, as identified by Resource Sponsor and Type Commander(s). No less than 75% of sensor engineering initiatives will be informed by an Analysis of Alternatives or market study to assess the state of the technology.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604221N *I P-3 Modernization Program*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	19.172	1.485	1.909	1.361	-	1.361	2.169	0.000	0.000	0.000	0.000	26.096
3016: *Fatigue Life Mgmt Program*	19.172	1.485	1.909	1.361	-	1.361	2.169	0.000	0.000	0.000	0.000	26.096

A. Mission Description and Budget Item Justification

Fatigue Life Management Program is required to manage P-3/EP-3 inventory fatigue life and includes ongoing structural analysis, analyzing emergent structural issues, conducting engineering studies, assessing Fleet impact, and applying new technologies such as Non-Destructive Inspection techniques.

This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	1.514	1.909	1.958	-	1.958
Current President's Budget	1.485	1.909	1.361	-	1.361
Total Adjustments	-0.029	0.000	-0.597	-	-0.597
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.029	0.000			
• Program Adjustments	0.000	0.000	-0.160	-	-0.160
• Rate/Misc Adjustments	0.000	0.000	-0.437	-	-0.437

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604221N / *P-3 Modernization Program*	Project (Number/Name) 3016 / *Fatigue Life Mgmt Program*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3016: *Fatigue Life Mgmt Program*	19.172	1.485	1.909	1.361	-	1.361	2.169	0.000	0.000	0.000	0.000	26.096
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Fatigue Life Management Program is required to manage P-3/EP-3 inventory fatigue life and includes ongoing structural analysis, analyzing emergent structural issues, conducting engineering studies, assessing Fleet impact, and applying new technologies such as Non-Destructive Inspection techniques.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: P-3/EP-3 Fatigue Life Management	1.485	1.909	1.361	0.000	1.361
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Fatigue Life Management Program: Manage P-3/EP-3 inventory fatigue life including conducting structural analysis, analyzing structural issues, conducting engineering studies, assessing Fleet impact. Research, test and apply new Fatigue Inspection techniques to the P-3/EP-3 Fleet.					
FY 2017 Plans: Fatigue Life Management Program: Manage P-3/EP-3 inventory fatigue life including conducting structural analysis, analyzing structural issues, conducting engineering studies, and assessing Fleet impact. Research, test and apply new Fatigue Inspection techniques to the P-3/EP-3 Fleet.					
FY 2018 Base Plans: Fatigue Life Management Program: Manage P-3/EP-3 inventory fatigue life including conducting structural analysis, analyzing structural issues, conducting engineering studies, and assessing Fleet impact. Research, test and apply new Fatigue Inspection techniques to the P-3/EP-3 Fleet.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.485	1.909	1.361	0.000	1.361

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0538: *P-3 Series*	2.983	2.781	0.700	-	0.700	0.829	0.633	0.000	0.000	0.000	4,911.636

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604221N / *P-3 Modernization Program*	**Project (Number/Name)** 3016 / *Fatigue Life Mgmt Program*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

The Fatigue Life Management Program leverages off of prior work done under P-3 Service Life Extension Program (2451). The Anti-Surface Warfare Improvement Program Operational Requirements Documents 355-88-94 was approved 30 March 94. Work will be performed by Lockheed Martin Aeronautical Systems and other industry participants along with the Naval Air Systems Command Structural Engineering Dept, AIR-4.3. This program supports the 7 June 2003 CNO approved P-3/EP-3 Sustainment Bridge to Multi-Mission Maritime Aircraft.

E. Performance Metrics

Successful application of system engineering processes.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604230N *I Warfare Support System*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	65.067	5.740	13.237	14.167	-	14.167	11.699	9.963	10.159	10.356	Continuing	Continuing
3326: *NSW Rapid Capabilities Development for CIEC*	18.942	2.303	6.708	8.173	-	8.173	6.624	5.430	5.532	5.636	Continuing	Continuing
4011: *Naval Coastal Warfare Surv and C4I Sys*	42.043	2.879	3.406	3.886	-	3.886	3.735	3.670	3.743	3.818	Continuing	Continuing
9C86: *Combatant Craft Replacement*	4.082	0.558	3.123	2.108	-	2.108	1.340	0.863	0.884	0.902	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Rapid Capabilities Development (RCD) project supports the Naval Special Warfare Branch to identify and assess available technologies that confront current and future irregular and expeditionary challenges. The program's development efforts are focused on the enhancement/advancement of existing technologies to fill urgent and emergent capability gaps for Naval Special Warfare (NSW). Program funding provides for the development, integration, testing, validation and combat demonstration of identified technologies and/or packages of technologies to meet: Overseas Contingency Operations (OCO) goals, service common and NSW program technology challenges, and technology obsolescence issues of developed capabilities. The goal of the RCD project is to develop expeditionary/operational capabilities for NSW that enable its force to conduct cross-domain special reconnaissance, counterterrorism, direct action, irregular warfare, and foreign internal defense; and fulfill urgent/emergent needs within a 6-24 month timeframe.

As part of the Naval Coastal Warfare Surveillance program, Identity Dominance System (IDS) supports the Joint Personnel Identity (JPI) program. MESF forces have a mobile security mission that requires methodologies, procedures, equipment and the communications capacity to identify individuals who represent a potential threat as a means to deter and eliminate individuals from conducting asymmetric/non-traditional attacks upon friendly forces, high value assets and coastal areas that NCW is charged with protecting. The Visit, Board, Search and Seizure (VBSS) teams conducting Expanded Maritime Interception Operations also have a similar requirement to identify individuals. The development of a device to support identity functions is captured in the Identity Dominance System Capability Development Document (IDS CDD) and implemented in the Identity Dominance System Capability Production Document (IDS CPD). IDS units are used in the following environments: aboard ship and ashore in ports, the littorals and extended inland field environments worldwide. IDS is employed in maritime and very austere ashore environments and carried by individuals who are part of ship boarding parties and dismounted patrols. These mission and environmental demands dictate a portable, lightweight, rugged, and reliable system with intuitive and user friendly features. IDS biometric modalities may differ by mission profile, requiring the authoritative response to the On-Scene Commander/ Boarding Officer on whether to detain or further investigate an individual of interest.

The Navy Expeditionary C4I project supports the Navy Expeditionary Combat Command (NECC) mission to detect, deter or interdict potential threats to DoN assets using agile, modular and scalable technology. NECC units have a number of current and future Command, Control, Communications, Computers & Intelligence (C4I) technological requirements for Tactical/Command Operations Center, tactical vehicles, combatant craft, and dismounted personnel. NECC operations require units to maintain effective command and control, develop and display a common tactical picture, and share intelligence and current operational information with higher

headquarters, subordinate units, joint forces and coalition allies. Small, Medium, and Large Scale Communication Systems (LSCS) are the C4I hub for the NECC; Navy Enterprise Tactical Command and Control (NETC2) is the converged LSCS baseline. Future C4I research and development include enhanced information transport, network cyber security posture, assured communications in denied environments along with agility and mobility. Funding is required for testing and evaluation of cyber security issue associated with obsolescence of network items and if not addressed will impact the ability of the Program Office to maintain system accreditation under Risk Management Framework (RMF) revoking multiple LSCS assets authority to connectivity on the Department of Defense Information Network (DoDIN). Efforts are in alignment with NECC's strategic Expeditionary Warfare Improvement Program (EXWIP) Integrated Priority Capability List (IPCL) priorities and maintain alignment with greater DoD initiatives, such as Joint Information Environment (JIE), Mission Partner Environment (MPE) in order to maintain interoperability and drive down DoN enterprise costs.

Combatant Craft Replacement will provide second generation Riverine Multi Mission Craft that will replace in-service Riverine Patrol Boats (RPBs) and Riverine Assault Boats (RABs). Combatant Craft replacements will: conduct inland waterway patrol and interdiction to preserve the rivers for friendly use as lines of communications; deny the use of rivers and waterways to waterborne and immediate shore sited hostile forces by barrier and interdiction operations; and, with augmentation of ground and air forces, locate and destroy hostile forces within a riparian area. Specific mission and capabilities will be identified in an Initial Capabilities Document (ICD). RDT&E funding will fund feasibility studies and procurement of mock-ups and prototype craft to demonstrate capabilities prior to production craft procurement.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	5.875	13.237	12.251	-	12.251
Current President's Budget	5.740	13.237	14.167	-	14.167
Total Adjustments	-0.135	0.000	1.916	-	1.916
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.135	0.000			
• Program Adjustments	0.000	0.000	-0.003	-	-0.003
• Rate/Misc Adjustments	0.000	0.000	1.919	-	1.919

Change Summary Explanation

FY 2018 + 1.916 to identify, assess, integrate and test prototype technologies focused on Counter Unmanned Aerial Systems (CUAS).

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604230N / *Warfare Support System*	Project (Number/Name) 3326 / *NSW Rapid Capabilities Development for CIEC*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3326: *NSW Rapid Capabilities Development for CIEC*	18.942	2.303	6.708	8.173	-	8.173	6.624	5.430	5.532	5.636	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Rapid Capabilities Development (RCD) project supports the Naval Special Warfare Branch to identify and assess available technologies that confront current and future irregular and expeditionary challenges. The program's development efforts are focused on the enhancement/advancement of existing technologies to fill urgent and emergent capability gaps for Naval Special Warfare (NSW). Program funding provides for the development, integration, testing, validation and combat demonstration of identified technologies and/or packages of technologies to meet: Contingency Operations goals, service common and NSW program technology challenges, and technology obsolescence issues of developed capabilities.

The goal of the RCD project is to develop expeditionary/operational capabilities for NSW that enable its force to conduct cross-domain special reconnaissance, counterterrorism, direct action, irregular warfare, and foreign internal defense; and fulfill urgent/emergent needs within a 6-24 month timeframe.

In addition to supporting NSW the program also provides support for irregular warfare and expeditionary related urgent/emergent technology requirements as outlined in Joint Urgent Operational Needs (JUON), Navy Urgent Operational Needs (UON), and/or support rapid insertion into a Department of Navy (DoN) Program of Record (PoR) or other acquisition programs.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Navy Irregular Warfare	2.303	6.708	8.173	0.000	8.173
Articles:	-	-	-	-	-
FY 2016 Accomplishments: In FY 2016 prototypes were rapidly developed and fielded for niche capability gaps articulated by NSW, EOD, and the Intelligence Community. The primary focus of efforts was on undersea technologies, ultimately yielding advancements in new underwater communications, threat detection, and render-safe capabilities. Four different prototypes delivered by FY-16 investments have been operationally employed or delivered for end-user evaluation in support of expeditionary special operations interests. Other FY 16 efforts included: - Mk18 FoS: Mine Warfare project designed to enhance an existing Mobile Gateway Buoy developed via Small Business Innovative Research (SBIR) funding that expands the data transfer capability collected by an					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604230N / *Warfare Support System*	**Project (Number/Name)** 3326 / *NSW Rapid Capabilities Development for CIEC*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Unmanned Underwater Vehicle through the buoy to a base station to shorten the time required to prosecute mine fields in support of EOD operations. Project underway. - Magnetically Coupled Antenna: Prototype UHF magnetic antenna designed to address low angle Satellite Communications capability gap aboard fleet mobility assets was delivered and tested. Technology did not prove to markedly improve the current capability and the effort was terminated. - iPUMA: Forward engineering of existing SONAR components to modernize the obstacle avoidance system used by Naval Special Warfare (NSW). Obsolescence engineering completed and updated serval electronic components; improved iPUMA now prepped to deliver in early FY18. - Dynamic Crane Study: Completed the engineering study to develop a dynamically stabilized crane aboard the Joint High Speed Vessel for small boat/craft/vehicle launch and recovery in support of expeditionary and special operations forces. Effort achieved an "Agreement in Principal" from the American Bureau of Shipping (the governing certification authority for at sea crane operations) to continue the development. Effort expected to transition to Navy N4 for execution. - Additive Manufacturing: Delivered Additive Manufactured Mission Optimized propellers designed to rapidly provide man-portable Unmanned Underwater Vehicles with the capability to choose propellers based on mission need: propellers undergoing government verification testing. Completed two acoustic studies of additive manufactured material properties to assess feasibility of use in the undersea environment: results demonstrated promise in certain frequency ranges and informed developers on capabilities and limitations of additive for undersea applications. Delivered a medium area additive manufacturing printer that has already been leveraged to accelerate prototyping in support of NSW capability gaps.					
FY 2017 Plans: i.External Personnel Pods: Leverages additive manufacturing to rapidly prototype external personnel pods for special operations undersea mobility assets to provide additional capacity for the end-user. The pod resembles a sidecar strapped to the SEAL Delivery Vehicle (SDV), delivering more operators to the fight. This effort increases operational flexibility and reach for theater commanders when they employ undersea SOF. ii. Lithium-ion Fault Tolerant for Semi-Autonomous Hydrographic Reconnaissance Vehicle: Retrofit the Semi-Autonomous Hydrographic Reconnaissance Vehicles (man-portable Unmanned Underwater Vehicle (UUV) systems used to prosecute mines and conduct hydrographic surveys) with the General Atomics Lithium-ion Fault Tolerant battery system to improve the overall safety of a UUV; and potentially lower total ownership costs of power and energy systems for mobility and support assets for the Naval Special Warfare and Explosive					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604230N / *Warfare Support System*	**Project (Number/Name)** 3326 / *NSW Rapid Capabilities Development for CIEC*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Ordinance Demolition communities. This project leverages U.S. Special Operations Command (USSOCOM) investment in this technology (>$10M) and aligns systems for Joint use. iii. Critical Battery Management System: Develop a safety certified battery management system for use with the General Atomics configurable Lithium-ion Fault Tolerant battery that enables management and control of battery systems to maximize mission performance and minimize battery risks. This project leverages USSOCOM investment in this technology; and sets the stage for lowering the risk of lithium-ion battery use for U.S. Navy systems that have to date been unable to be approved for use aboard ships and submarines. iv. Flex Fuel Generator: Develop a compact, man-portable modified COTS 500W multi-fuel generator capable of powering devices at 28VDC through the implementation of proprietary cold start, and fuel / thermal management hardware and control protocols. This technology enables ground and maritime units the operational flexibility to maintain their power and energy systems charged while in the field; offering increased operational flexibility on the battlefield. v. Active Diver Thermal: Develop a simple insulated over-garment that traps the heated seawater, created by a tailored exothermic reaction between aluminum-alloy and water, next to the body. This system is power independent and reliable due to the simplicity of the heat-producing chemical reaction. The exothermic reaction is analogous to the chemical reaction that occurs in a Meal-Ready-to Eat (MRE) heater packet. To date, neither the U.S. Navy nor USSOCOM have a non-powered solution to meet the requirement for diver thermal protection in extreme cold water conditions. Thermal balance allows for increased dexterity and cognitive response of U.S. Navy and SOF divers; reducing risk to mission and force. vi. Sea Stalker: Maritime variant of the Spectral Sieve technology to bring Electronic Warfare Support (ES) capability to the undersea environment; allowing operators to search for, intercept, and identify sources of intentional or unintentional radiated electromagnetic energy for immediate threat recognition, targeting, planning, and intelligence and operational preparation of the battlefield; which directly impacts operational effectiveness. This effort brings a new capability to undersea mobility platforms; which can also be transitioned to other surface mobility assets. vii. NAUTICAS / Mini Neutron Generator: Effort supports on-going project work designed to provide explosives detection of underwater mines buried into sea floor. Initial prototype proved successful during "blind" testing with					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604230N / *Warfare Support System*	**Project (Number/Name)** 3326 / *NSW Rapid Capabilities Development for CIEC*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
a 90% probability of detection. This neutron generator technology has the ability to detect explosives onboard a ship from subsurface positions external to a ship's hull. ***FY 2018 Base Plans:*** FY 2018 provides funding to identify, assess, integrate and test prototype technologies focused on Counter Unmanned Aerial Systems (CUAS) for the Joint Urgent/Emergent Operational Needs (JUON/JEON) to support NSW. Investments will focus on immediate NSW requirements; while leveraging existing efforts across DoD to accelerate a solution to the field. Program will also support rapid innovation to solve new problems plaguing ongoing operations. The most notable forecasted effort is Maritime Precision Engagement (MPE). A fielded MPE capability will address two operational gaps: precision strike from a small surface craft within a contested environment; and a land-based, organic stand-off weapon launched from a light, tactical vehicle with considerable range, precision, terminal control, and loiter capability. Such capabilities would counter multiple documented threats associated with both peer adversaries and VEOs. Additionally the program will continue to identify, assess, integrate and test technologies focused on close-in expeditionary ISR, power and energy, diver thermal, sensor integration (EO/IR, Acoustic, RF), signature management, and navigation and communications in denied environments. The Broad Area Announcement process for the identification of technologies that enhance and/or accelerate expeditionary and irregular capabilities in support of NSW capability challenges remains open. Currently there are 15 proposals in the review process for potential award in FY 2018. Once selected, those projects will be submitted to contracts for execution. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	2.303	6.708	8.173	0.000	8.173

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604230N / *Warfare Support System*	**Project (Number/Name)** 3326 / *NSW Rapid Capabilities Development for CIEC*

D. Acquisition Strategy

Identify the requirements necessary to meet immediate and future warfighter needs; integrate existing unique and/or related capabilities that can best meet those warfighter needs; test those integrated capabilities; and then demonstrate in real time and/or during planned deployments within a 6-24 month period. Endeavor to leverage existing mature technologies to take advantage of investments already made to reduce cost and time to market; and seek out cost-sharing opportunities with other resource sponsors to make program funding more effective for the expeditionary end-user.

E. Performance Metrics

Test, verify and validate developed system parameters against approved threshold and objective operational requirements established by the intended expeditionary end-user within the established budget and schedule. Transition the developed technologies to the respective Program Managers or end-users for operational evaluation.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy										Date: May 2017		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604230N / *Warfare Support System*				Project (Number/Name) 4011 / *Naval Coastal Warfare Surv and C4I Sys*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
4011: *Naval Coastal Warfare Surv and C4I Sys*	42.043	2.879	3.406	3.886	-	3.886	3.735	3.670	3.743	3.818	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Navy Expeditionary project supports the Navy Expeditionary Combat Command (NECC) mission to detect, deter or interdict potential threats to DoN assets using agile, modular and scalable technology. NECC units have a number of current and future Command, Control, Communications, Computers & Intelligence (C4I) technological requirements for Tactical/Command Operations Center, tactical vehicles, combatant craft, and dismounted personnel. NECC operations require units to maintain effective command and control, develop and display a common tactical picture, and share intelligence and current operational information with higher headquarters, subordinate units, joint forces and coalition allies. Small, Medium, and Large Scale Communication Systems (LSCS) are the C4I hub for the NECC; Navy Enterprise Tactical Command and Control (NETC2) is the converged LSCS baseline. Future C4I research and development include enhanced information transport, network cyber security posture, assured communications in denied environments along with agility and mobility. Funding is required for testing and evaluation of cyber security issue associated with obsolescence of network items and if not addressed will impact the ability of the Program Office to maintain system accreditation under Risk Management Framework (RMF) revoking multiple LSCS assets authority to connectivity on the Department of Defense Information Network (DoDIN). Efforts are in alignment with NECC's strategic Expeditionary Warfare Improvement Program (EXWIP) Integrated Priority Capability List (IPCL) priorities and maintain alignment with greater DoD initiatives, such as Joint Information Environment (JIE), Mission Partner Environment (MPE) in order to maintain interoperability and drive down DoN enterprise costs.

The future of large scale communications assets such as Mobile Ashore Support Terminal (MAST), Ruggedized Deployable Satellite/Tactical Data Network (RDSAT/ TDN) and Deployable Expeditionary Network-Medium (DEXNet-M) supporting Surveillance Control Central, Expeditionary (ESCC) formerly Radar Sonar Surveillance Center (RSSC) will be converging to a common baseline, the Navy Enterprise Tactical Command and Control (NETC2). Next generation air, surface and subsurface surveillance systems, as well as enhanced C4I capabilities, are required to meet operational objectives. Future technologies are being evaluated as enabling capabilities to expand situational awareness, providing additional tactical decision aids to the local area commander. Future C4I research and development efforts will be identified within NECC strategic Expeditionary Warfare Improvement Program (EXWIP) Integrated Priority Capability List (IPCL) priorities to increase agility, mobility and network security posture. Additional efforts will be driven by greater DoD initiatives, such as Joint Information Environment (JIE) Inc II, in order to maintain interoperability and drive down DoN enterprise costs.

Identity Dominance System (IDS) supports the Navy's Visit, Board, Search and Seizure (VBSS) teams conducting Expanded Maritime Interception Operations with a biometric capability. IDS provides the Navy with a means to collect and process identity information in the conduct of maritime and expeditionary operations. There are three key aspects of this capability: 1) enable forces to rapidly identify unknown individuals encountered in the conduct of operations; 2) verify an unknown individual's claimed identity; and 3) enable forces to update, manage, and share identity information on friendly, neutral, and enemy individuals in support of identity operations (IdOps). To support IdOps and achieve identity dominance for expeditionary and naval forces, the future biometrics collection and processing equipment needs to be smaller, lighter, and more efficient with respect to computing power and speed when compared against the current system. The equipment needs to take advantage of

enhanced communications capabilities, be able to store the appropriate amount of data to collect biometric samples, match the samples against an internal database and reach near real time operations with connectivity to the DoD biometrics database. In addition to Navy VBSS Maritime Interception Operations (MIO), IDS also supports the Expeditionary Exploitation Unit One (EXU-1) expeditionary missions. IDS must continue to mature and adapt to the changing threat environment and emerging requirements to support these missions.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: NECC C4ISR Modernization	2.642	2.377	2.639	0.000	2.639
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Aligned NETC2 efforts to emerging DoD technologies in order to enhance capabilities provided to the warfighter and incorporated technologies in NETC2 test efforts in order to facilitate virtualization. Began moving Expeditionary common services to a Joint Information Environment (JIE) Core Data Center node using cloud infrastructure and inclusion of unique requirements into cloud generation.					
FY 2017 Plans: Develop common baseline load to streamline production and reduce cyber maintenance timelines from development through implementation. Further orientation to a multi-program baseline architecture while converging to the Joint Information Environment (JIE). Continue to incorporate Joint, DoD, and industry developed technologies in order to enhance NETC2 capabilities provided at the tactical edge while reducing system size, weight, power, and logistics infrastructure.					
FY 2018 Base Plans: Enhancing Assured Command and Control (AC2) in a compromised communication environments encompassing Joint Information Environment (JIE), Coalition, and Mission Partner Environment (MPE) data integration, and on-the-move tactical data exfiltration and sharing. As well as enabling Tactical Hosting Environment Security Enhancements by adopting Virtual Secure Enclave (VSE) hosting and data protection/ prioritization concepts, and expansion of Mission Support Center (MSC) capabilities.					
FY 2018 OCO Plans: N/A					
Title: Identity Dominance System	0.237	1.029	1.247	0.000	1.247
Articles:	-	-	-	-	-
Description: The Identity Dominance System (IDS) is facing obsolescence and is scheduled for a technology refresh in FY19 to field a sustainable system, reduce maintenance and sustainment costs, improve system capabilities, and eliminate performance shortfalls.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604230N / *Warfare Support System*	**Project (Number/Name)** 4011 / *Naval Coastal Warfare Surv and C4I Sys*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: The migration of IDS to Windows 7 was completed in FY16. IDS is in the process of retrofitting currently fielded Windows XP systems with Windows 7 systems. The IDS team has initiated technology review in support of the FY19 technology refresh. In collaboration with the USMC, IDS released a Request for Information (RFI), reviewed and ranked vendor submissions, scheduled and executed technology demonstrations and evaluations, and continued development of the IDS technology refresh roadmap. Additionally, IDS initiated a performance engineering change proposal (ECP) to improve the operator experience, maintain IA compliance and provide additional system enhancements that will increase system performance. Documentation updates were performed based on the system changes incorporated by the ECPs. ***FY 2017 Plans:*** IDS will complete fielding and retrofit of the Windows 7 baseline. The IDS team will continue technology assessment in support of technology refresh and begin reviewing and revising necessary documentation as required. Technology assessment will consist of vendor documentation review and testing IDS for interoperability with the ISNS and CANES shipboard networks. Additionally, IDS will initiate a performance ECP to provide capability enhancement and maintain IA compliance. Pursuant to IDS tech refresh strategy, efforts toward software development will begin. ***FY 2018 Base Plans:*** Starting in Q1FY18, IDS will release the RFP for IDS tech refresh and conduct source selection. IDS will continue to perform IA updates every quarter along with all other testing that will be needed for IDS tech refresh. In FY18, IDS will be fully into the operations and lifecycle maintenance phase; Research, Development, Testing and Evaluation (RDT&E) efforts will continue to develop and assess upgrades and modifications to keep IDS relevant and effective through follow-on Engineering Change Proposals (ECPs). IDS will mature and develop new technologies to meet emerging requirements in support of Counter IED and Force Protection Efforts to those deployed. US Central Command UONs currently exist for biometrics collection capabilities, and requirements continue to grow. Additionally, biometrics was ranked as the number one priority amongst Combatant Commands for current and future efforts. Due to the changing threat environment, the need for an enhanced capability has increased. The ability to rapidly collect and identify persons of interest (POIs) has become a high priority in order to effectively identify threats and improve combat operations. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	2.879	3.406	3.886	0.000	3.886

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604230N / *Warfare Support System*	**Project (Number/Name)** 4011 / *Naval Coastal Warfare Surv and C4I Sys*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/8120: *Maritime Expeditionary Security Force*	9.929	9.073	4.010	-	4.010	3.670	6.800	3.662	3.835	Continuing	Continuing

Remarks

D. Acquisition Strategy

Funding supports an evolutionary acquisition strategy supporting the dynamically evolving rapid action mission of Navy Expeditionary Forces. Large Scale Communication Systems (LSCS) funding will align LSCS to the Deployable Joint Command and Control (DJC2) product baseline. The project will continuously analyze operational utilization of the systems and will roll analysis results into periodic system upgrades to address cyber security vulnerabilities, obsolescence, and maximize operational effectiveness. The intent of this strategy is to: drive down development, production, and logistics costs, while leveraging technologies developed for other agencies to increase the capabilities of Navy Expeditionary Forces. The baseline configuration for Large Scale Communication Systems (LSCS) is the Navy Enterprise Tactical Command and Control (NETC2), a system scalable to Adaptive Force Package (AFP) levels. Efforts include development of capabilities based on emergent requirements, operational feedback, alignment with Dept. of Defense initiatives such as Joint Information Environment (JIE) / Mission Partner Environment, and identification through strategic Expeditionary and Warfare Improvement Program (EXWIP) Integrated Priority Capability List (IPCL) priorities to include reach back for tactical vehicles and craft, blue force tracking, tactical data link capability, and sensor technologies in support of surveillance and reconnaissance missions.

Identity Dominance System (IDS) will continue to provide a biometric capability to the Navy's expeditionary/forward deployed forces through system upgrades and further collaboration with other biometric stakeholders. The funding supports development and integration of new capabilities designed to enhance the overall performance of IDS and improve our Nation's security posture abroad and INCONUS. The program continually assesses the threat environment, security posture, operational requirements, and DoD and Navy policies related to Identity Operations and Force Protection. As DOD biometrics requirements continue to grow, new lower cost, more capable technologies are emerging. The program will evaluate, integrate, and field these new capabilities to Maritime and Expeditionary Forces.

E. Performance Metrics

The Navy Expeditionary program continues to identify, evaluate and test a minimum of 3-5 new technologies or configurations per year for potential insertion into the Technical Refresh Plan, to be demonstrated at Fleet Demonstrations

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604230N / *Warfare Support System*	Project (Number/Name) 9C86 / *Combatant Craft Replacement*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9C86: *Combatant Craft Replacement*	4.082	0.558	3.123	2.108	-	2.108	1.340	0.863	0.884	0.902	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Navy Expeditionary Combat patrol boat, Fleet Expeditionary Security combatant craft, Underwater Construction and Explosive Ordnance Disposal (EOD) replacements will provide second generation Multi Mission Craft that will replace in-service Force Protection Large, Force Protection Small, Riverine Patrol Boats (RPBs), Riverine Assault Boats (RABs), Underwater Construction and EOD craft. Boat and craft replacements will: conduct Maritime Security Operations across the full spectrum of naval, joint, and combined operations enabling access and freedom of action throughout the sea-to-shore and inland operating environments as well as conduct maritime Mine Countermeasures (MCM), counter Improvised Explosive Devices (IEDs), Weapons of Mass Destruction (WMD), and all other types of weaponry, for protection of naval and joint assets required for sea control and power projection. Specific mission and capabilities will be identified in an Initial Capabilities Document (ICD), Analysis of Alternatives (AoA), Capabilities Production Document (CPD) and required milestone documentation. RDT&E funding will fund procurement and material solution studies, advanced technology development and studies, design development and test and evaluation.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Combatant Craft Replacement	0.558	3.123	2.108	0.000	2.108
Articles:	-	-	-	-	-
Description: The boats and craft in the Navy Expeditionary Combat Command (NECC) fleet are reaching the end of their service lives and will create a capability gap if not replaced. Funding supports design/development and testing of NECC's next generation Patrol Boat (PB-X) and other NECC craft.					
FY 2016 Accomplishments: Completed design studies to replace and improve capabilities of legacy 33' Riverine Assault Boats, 33' Special Operations Craft Riverine, 34' Patrol Boats, and 39' Riverine Patrol Boats with a common combatant craft hull, PB(X). Continued to support MK VI PB Fleet Introduction, system familiarization, testing and training efforts.					
FY 2017 Plans: Conduct planning, research, analysis, design and development and operational testing for PB-X in support of NECC craft recapitalization. Continue science and technology development work to optimize material solutions to fill critical NECC capability gaps. Continue to support boat system development and demonstration, operational testing and crew familiarization for the MK VI Patrol Boat program.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604230N / *Warfare Support System*	**Project (Number/Name)** 9C86 / *Combatant Craft Replacement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Commence phased approach to recapitalize EOD Craft and other NECC Craft through material solution analysis and advanced technology development studies. Continue science and technology development work to optimize material solutions to fill critical NECC capability gaps. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.558	3.123	2.108	0.000	2.108

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/1210: *Standard Boats (NECC)*	0.059	8.235	8.382	18.000	26.382	11.204	11.312	11.420	11.624	Continuing	Continuing

Remarks

D. Acquisition Strategy

Acquisition of RDT&E developed craft material solution and technology to be accomplished using "tailored" commercial procurements in accordance with a PMS325G approved/OPNAV N95 endorsed NECC Craft Replacement Acquisition Strategy.

E. Performance Metrics

Successfully demonstrate system functionality to support approved requirements and Initial Capabilities Document (ICD).

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604231N *I Tactical Command System*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	806.770	75.508	40.323	55.695	-	55.695	71.345	61.044	60.324	37.922	Continuing	Continuing
0486: *Tactical Support Center*	124.551	4.921	5.244	5.665	-	5.665	5.687	5.786	5.903	6.018	Continuing	Continuing
2213: *Mission Planning*	319.764	38.993	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	358.757
3032: *NTCSS (Naval Tactical Command Spt Sys)*	73.323	11.390	13.610	4.044	-	4.044	0.000	0.000	0.000	0.000	0.000	102.367
3260: *Naval Operations Business Logistics Enterprise (NOBLE)*	0.000	0.000	0.000	19.102	-	19.102	35.038	31.721	20.202	5.191	Continuing	Continuing
3320: *TRIDENT Warrior*	11.305	2.143	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	13.448
3323: *Maritime Tactical Command & Control (MTC2)*	30.857	14.976	14.293	17.487	-	17.487	19.223	10.727	20.041	12.469	Continuing	Continuing
3324: *Navy Air Operations Command and Control (NAOC2)*	12.280	0.801	0.999	1.048	-	1.048	1.014	1.034	1.055	1.076	Continuing	Continuing
3425: *Digital Warfare Office (DWO) MBE&DT Development*	0.000	0.000	0.000	5.950	-	5.950	8.150	9.500	10.800	10.800	Continuing	Continuing
9123: *FORCEnet*	234.690	2.284	6.177	2.399	-	2.399	2.233	2.276	2.323	2.368	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Tactical Command System upgrades the Navy's Command, Control, Communications, Computer and Intelligence (C4I) systems and processes C4I information for all warfare mission areas including planning, direction and reconstruction of missions for peacetime, wartime and times of crises.

Tactical Support Center: The Tactical Mobile (TacMobile) program provides evolutionary systems and equipment upgrades to support the Maritime Patrol and Reconnaissance Force Commanders with the capability to plan, direct and control the tactical operations of Maritime Patrol and Reconnaissance Aircraft and other assigned units within their respective area of responsibility. Looking ahead, TacMobile provides critical reach-back capabilities between the Maritime Patrol and Reconnaissance Aircraft, primarily the P-8A/Poseidon, and MQ-4C/Triton, and the Maritime Intelligence Surveillance and Reconnaissance Enterprise. These operations include littoral, open ocean, and over land long-dwell surveillance, anti-surface warfare, over-the-horizon targeting, counter-drug operations, power projection, anti-submarine warfare, mining, search and rescue, indications and warnings, and special operations. The missions are supported by the Tactical Operations Centers and the Mobile Tactical Operations Centers.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
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Mission Planning: The Joint Mission Planning System (JMPS) is the designated automated mission planning system for the Navy. JMPS enables weapon system employment by providing the information, automated tools, and decision aids needed to rapidly plan aircraft, weapon, or sensor missions, load mission data into aircraft and weapons, and conduct post-mission analysis. JMPS is a mission critical system which is a co-development effort between the United States Navy (USN) and United States Air Force (USAF). Common requirements are identified and capabilities are developed and prioritized in an evolutionary approach. An individual JMPS Mission Planning Environment (MPE) is a combination of the JMPS framework, common components, and the necessary system hardware required to satisfy mission planning objectives. Most Tactical Naval Aviation platforms are dependent solely on JMPS to plan precision guided munitions, sensor systems, tactical data links, secure voice communications, and basic Safety of Flight functions. The following type/model/series (T/M/S) naval aircraft are supported by JMPS: AH-1W, F/A-18 A-F, E-2C, EP-3E, EA-6B, AV-8B, S-3, V-22, Chief of Naval Air Training (CNATRA), EA-18G, MV-22, C-2, MH-53E, P-3, Aircraft Carrier Intelligence Center (CVIC), SH-60B/F, HH-60H, CH-53D/E, CH-46E, UH-1N, VH-3/VH-60, AH-1Z, UH-1Y, MH-60R/S and E-2D. All T/M/S are required to transition to Microsoft Windows 7 due to End of Life (EOL) of Microsoft XP (April 2014)using Framework (FW) Version 1.3.5. Custom support for Windows XP is planned to allow remaining naval aircraft to be supported during the transition. Future JMPS platforms include: MQ-4C (Triton) and CH-53K. The re-architecture of JMPS will support net-centric goals by providing route "publish and subscribe" capabilities, transition to 64 bit allows for memory space expansion to accommodate future Microsoft Operating Systems, emerging technologies, and critical Cyber Security updates. Funding profile includes JMPS baseline efforts for all existing T/M/S on Windows 7 32 bit framework while concurrently re-architecting to a 64 bit framework. 64-bit development requires complete software restructure to address memory limitations and system errors resulting in JMPS computer crashes. The transition from the current 32-bit architecture (4GB RAM) to a 64-bit architecture (196GB RAM) provides additional memory access, increased planning efficiencies; creating a more stabilized architecture with fewer fleet memory crashes. Delaying JMPS 64-bit transition to the fleet will cause system crashes to continue. It will also delay required mission planning fixes based upon known software obsolescence, and decreases platform stability.

Naval Tactical Command Support System (NTCSS): The NTCSS is a multi-function program designed to provide standard tactical support information systems to various afloat and associated shore-based fleet activities. The mission is to provide the Navy and Marine Corps with an integrated, scalable system that supports the management of logistical information, personnel, material and funds required to maintain and operate ships, submarines, and aircraft.

The Naval Operational Business Logistics Enterprise (NOBLE) family of programs will provide direct support to warfighter readiness with maintenance, supply, and personnel administration capabilities using an open architecture framework that incorporates business process re-engineering (BPR) allowing for the consolidation of over 23 standalone application systems. These capabilities include enhanced situational awareness, planning, execution, personnel administration, and management of maintenance and supply logistics and business functions to ships/submarines, aviation squadrons, shore operational sites, and expeditionary units with a total user base exceeding 150,000. NOBLE will meet current and emerging demands for cyber, Financial Improvement and Audit Readiness (FIAR), Navy logistics and maritime maintenance mission requirements, and eliminate over 700 application/database servers. NOBLE will deploy to Navy Enterprise Data Centers (NEDC) ashore, the Consolidated Afloat Networks and Enterprise Services (CANES) afloat, and Department of the Navy (DON) commercial cloud computing environments.

Maritime Tactical Command and Control (MTC2) is the next generation C2 solution that will deliver Battle Management Aids (BMA) and Maritime Planning Tools (MPT) to dynamically plan, direct, monitor, and assess maritime operations in support of Joint, Multi-Service, Coalition Forces planning. MTC2 will leverage a System of Services (SoServ) to deliver capabilities improving decision speed and dynamic synchronization of forces. BMAs/MPTs are small, capability-focused deliveries that can be rapidly developed, tested, and fielded. MTC2 will engage with the OPNAV-led Requirements Governance Board to define and prioritize the BMAs and MPTs that MTC2 will be on deliver and align to the PEO enterprise architecture (Consolidated Afloat Network Enterprise Service (CANES), Agile Core Services (ACS)) for

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
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fielding to all echelons of command (afloat and ashore) within the Navy. The program's objective is to provide a suite of maritime applications (BMAs/MPTs) that enable planning, execution, monitoring, and assessment in support of operational and tactical level of war requirements. MTC2 will field BMAs/MPTs designed to provide automated and structured support for tactical and operational planning, decision-making, and execution. MTC2 will incorporate distributed data transfer capability for enhanced operational data exchange between command and control systems, combat systems, logistics, and intelligence systems for timely threat identification, location, and status alongside blue force data. MTC2 will provide Global Force Management - Data Initiative (GFM-DI) is the Department-wide enterprise solution that enables visibility/accessibility/sharing of data applicable to the entire Department of Defense (DoD) force structure. MTC2 will be the program that fulfills a portion of the Navy's GFM-DI requirements.

Navy Air Operations Command and Control (NAOC2): NAOC2 integrates and tests Air Force program of record systems that provide an integrated and scalable planning system for standardized, secure, and automated decision support for Air Force, Joint, and Allied commanders worldwide. These programs provide automated air operations planning, execution management and intelligence capabilities at the Force level to include fleet commanders, numbered fleet commanders, Commander Carrier Strike Groups, Commander Expeditionary Strike Groups, Commander Landing Forces, and Joint Task Force Commanders. NAOC2 includes Theater Battle Management Core System (TBMCS) and Command and Control Air Operations Suite - Command and Control Information Services (C2AOS-C2IS). C2AOS-C2IS is being developed as a Service Oriented Architecture (SOA) service to allow for scalability and integration with Common Computing Environments (CCE). Continuation of these efforts will significantly enhance the Joint Force Air Component Commander and Combined Air Operations Center personnel to plan daily air operations including strike, airlift, offensive/defensive air, and refueling missions in support of combat operations, addressing the requirement of war fighter distributed planning and execution processes along with significantly improving Joint interoperability. TBMCS continues a hardware transition to CCEs such as Consolidated Afloat Networks and Enterprise Services (CANES). Currently, TBMCS is the key system that is used to conduct real world air planning in the Joint and Navy environments. C2AOS-C2IS will replace TBMCS in a SOA environment while bringing more flexibility to the war fighter.

Digital Warfare Office (DWO): Supports the development of requirements modeling and data science experimentation environment, mission area model-based engineering (MBE) teams, development of digital technical baselines, development of digital architectures, and the development of workforce training in model-based systems engineering.

FORCEnet: Initiative's mission is to deliver Information Dominance by (a) accelerating the transformation to a Distributed, Networked force; (b) achieve interoperability based on Architectures and Standards; and (c) Experiment with, evaluate and employ the enabling technologies. Effort is a non-acquisition program that is the operational instantiation of FORCEnet. The end-state is a distributed network of weapons, sensors, Command and Control (C2), platforms and warriors.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604231N *I Tactical Command System*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	73.533	36.323	46.278	-	46.278
Current President's Budget	75.508	40.323	55.695	-	55.695
Total Adjustments	1.975	4.000	9.417	-	9.417
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	3.400	0.000			
• SBIR/STTR Transfer	-1.426	0.000			
• Program Adjustments	0.000	4.000	9.050	-	9.050
• Rate/Misc Adjustments	0.001	0.000	0.367	-	0.367

Change Summary Explanation

Technical: Not applicable.

Schedule:

TACTICAL SUPPORT CENTER (Project 0486):
Increase in FY2018 is in support of the focus on Systems Engineering and Primary Hardware Development efforts as TacMobile approaches the Preliminary Design Review (PDR) for Increment 3, to prepare for support of ACAT I P-8A Increment 3 Integrated Test events by FY20. Specific efforts include: Engineering and development of TacMobile architecture for P-8A Applications Based Architecture (ABA) interface and building an Engineering Development Model with appropriate P-8A ABA interface to enable and test net ready application; Engineering and development of a TacMobile architecture interface for P-8A Anti-Submarine Warfare (ASW) Signals Intelligence (SIGINT); Engineering, development and integration of Multiple Security Level enclaves, or common solution to remain interoperable with P-8A security interfaces.

Naval Tactical Command Support System (NTCSS) (Project 3032):
Funding in Project 3032 decreases from FY2017 to FY2018 as NTCSS transitioned development of tactical support information systems to the Naval Operational Business Logistics Enterprise (NOBLE). Software conversion efforts for Naval Aviation Logistics Command Management Information System (NALCOMIS) applications, Optimized Intermediate Maintenance Activity (OIMA) and Optimized Organizational Maintenance Activity (OOMA), transitioned to NOBLE, Project 3260 in FY2018.

Naval Operational Business Logistics Enterprise (NOBLE) (Project 3260):
FY2018 new start.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
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Maritime Tactical Command and Control (MTC2) (Project 3323):
MTC2 funding prioritized to address operational and tactical Battle Management Aids (BMAs) and Maritime Planning Tools (MPTs). MTC2 Project Description Document (PDD) outlines the initial project scope to introduce prototype software in a SIPRNET Development Environment to gain fleet feedback on capabilities and requirements for the MTC2 transition to an Acquisition Category (ACAT) program of record. Beginning in FY18, GFM-DI plans and accomplishments will be moving under the MTC2 Project and Program of Record. Increased funding in FY2018 provides the necessary resources for software development and integration necessary to be hosted on the enterprise infrastructure, system test, and production activities (to include logistics) required to deliver an operational planning tool prototype. Specific capabilities developed in FY2018 are enhanced tactical picture, web-enabled interface, plan/re-plan force allocation, collaboration planning, synchronization and early implementation of a layered cyber defense. Additionally, it provides resources necessary to investigate and transition Science and Technology products to satisfy detailed MTC2 capabilities.

Navy Air Operations Command and Control (NAOC2)(Project 3324):
United States Air Force (USAF) Command and Control Air Operations Suite-Command and Control Information Services (C2AOS-C2IS) software development delays due to software maturity and realignment of critical user requirements resulted in a schedule slip/compression for Navy integration and testing efforts. Integrated Developmental Test and Operational Tests (OT) now include Capability Package (CP) 3 in addition to CP1 and CP2, with separate OTs added for Afloat and Ashore, and has been aligned to the latest Air Force testing schedule. CP5 was originally defined as emerging requirements, but has been relabeled by USAF as C2AOS-C2IS modernization, since it will release multiple software modifications and involve multiple integration efforts.

Mission Planning (Project 2213):
Test and Evaluation:
Framework v1.3.5 MPE integration/validation has extended from 4th QTR 2015 to 4QTR 2016 to allow full fielding of Mission Planning on the F/A-18 platform. Mission Planning schedule FY17 and out is included in Mission Planning PE 0605215N.

Funding:

FORCEnet (Project 9123)

$4.000 million is required to support approved increases for the Digital Warfare Office (DWO). Funding supports development of requirements modeling and data science experimentation environment, mission area model-based engineering (MBE) teams, development of digital technical baselines, development of digital architectures, and the development of workforce training in model-based systems engineering.

DWO funding will be moved to PU 3425 starting in FY18.

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COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0486: *Tactical Support Center*	124.551	4.921	5.244	5.665	-	5.665	5.687	5.786	5.903	6.018	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

TacMobile brings Enterprise Command, Control, Communications, Computers and Intelligence, Surveillance and Reconnaissance (C4ISR) to the Maritime Patrol and Reconnaissance Force (MPRF) community.

TacMobile is a long-running, multi-year acquisition program which provides Command, Control, Communications, Computers, and Intelligence (C4I) for Navy's Maritime Patrol and Reconnaissance Force (MPRF). From within Tactical Operations Centers (TOC) at well-supported airfields, TacMobile provides theater Anti-Submarine Warfare (ASW) and Intelligence Surveillance Reconnaissance (ISR) commanders a common tactical picture while providing pre-flight and post-flight support to manned and unmanned MPRF aircraft. From within Mobile Tactical Operations Centers (MTOC), TacMobile supports manned MPRF aircraft at the tactical edge of operations. TacMobile fly-away kits can support manned MPRF aircraft in short-duration expeditionary settings.

Services provided include analysis and correlation of diverse sensor information; data management support; command decision aids; rapid data communication; mission planning, evaluation and reach-back dissemination of surveillance data and threat alerts to operational users ashore and afloat, and to the Maritime Intelligence Surveillance and Reconnaissance Environment.

TOCs provide Command, Control, Communications, Computers and Intelligence (C4I) capability, air-ground, satellite and point-to-point communications systems; sensor analysis capabilities; avionics and weapons system interfaces and facilities equipment. MTOCs are scalable, mobile versions for operations from remote forward operating airfields. This program assures that existing TOCs and MTOCs are interoperable to fulfill their operational requirements. TOC/MTOC will continue to provide the ground Command and Control capabilities, reach-back and C4I interfaces for the MPRF Family of Systems (FOS) aircraft and systems evolution including P-8A Multi-mission Maritime Aircraft (MMA) baseline and Increment 2, and the development of future C4I support capabilities for the P-8A Poseidon Increment 3, Advanced Airborne Sensor (AAS), and the MQ-4C TRITON Unmanned Aerial System.

The TacMobile program follows an Evolutionary Acquisition approach for adding capabilities that maintain and support MPRF weapons systems. Current requirements for TacMobile are to adapt to a smaller footprint and scalable Network-centric Services Oriented Architecture (SOA) configuration. Additional TacMobile requirements are to simplify and streamline the Pre-Flight Insertion Data (PID) process for mission aircraft, and to satisfy the need for sensor data sharing between aircraft and the Maritime Intelligence Surveillance and Reconnaissance Enterprise.

FY18: Funding supports core TacMobile systems development and testing of Increment 3, and Technical Refresh to Increment 2.1, to maintain interoperability with P-8A Poseidon and the MQ-4C Triton. Specifically this development is intended to align and support P-8A Inc 3 Block 2 Integrated Testing beginning in FY19, increase modularity, establish additional security enclaves and reduce footprint to offset the size/weight/cube of additional required aircraft interfaces developed to support P-8A Increment 3, Advanced Airborne Sensor (AAS) and emerging Maritime Patrol and Reconnaissance Aircraft operations. Network-centric Services Oriented Architecture (SOA) and airborne C4I integration efforts continue to ensure interoperability with emerging MPRF Aircraft and Sensors, streamline Pre-Flight Insertion Data (PID), facilitate the MPRF ISR and ASW data Processing - Exploitation - Dissemination (PED) process, and reduce TacMobile footprint, enhancing mobility capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Net Ready	0.938	0.938	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Developed plan of action to Integrate Services Oriented Architecture (SOA) implementations from P8 Applications Based Architecture with TacMobile architecture and leverage Tactical Operations Center Operational Control Prototype SOA development with TacMobile Services Oriented Architecture implementation based on Best of Breed from P8 Applications Based Architecture and leveraged Tactical Operations Center Operational Control Prototype SOA work - (TR 2.1.2/Inc 3). Completed analysis and initial integration of Automated Digital Network System and Full Motion Video implementations - (TR 2.1.1). Coordinated with Family of Systems Community of Interest data model development for TacMobile SOA environment instantiation with Extensible Markup Language (XML) schema and Tactical Operations Center Mobile Tactical Operations Center Content Management XML Data Dictionary - (Inc 3). Finalized TacMobile Data Strategy, began development of Information Support Plan, and drafted the Capabilities Production Document (CPD) for Increment 3, supporting P-8A Poseidon Inc 3 - (Inc 3). Continued development of Tactical Operations Center (TOC)/Mobile Tactical Operations Center (MTOC) Operational view and System view Department of Defense Architecture Framework (DoDAF) products, and integrated to the Maritime Patrol and Reconnaissance Force /Air Anti-Submarine Warfare Community of Interest Family of Systems Department of Defense Architecture Framework products - (Inc 3). Completed review of TacMobile Concept of Operations (CONOPS) in alignment with Commander Patrol and Reconnaissance Group's Family of Systems CONOPS - (Inc 3). Completed identifying requirements to evolve legacy point to point exchanges of information to utilize Services Oriented Architecture and new technologies, established plan of action to evaluate and down select sustainable technologies - (Inc 3). Refined Measures of Effectiveness to maintain integrated requirements management with Increment 3 architecture elements - (Inc 3).					
FY 2017 Plans: Continue to mature Services Oriented Architecture (SOA) implementations from P8 Applications Based Architecture with TacMobile architecture - (Inc 3). Leverage Tactical Operations Center Operational Control Prototype SOA development with TacMobile Services Oriented Architecture implementation based on Best of Breed from P8 Applications Based Architecture and leveraged Tactical Operations Center Operational Control Prototype SOA work - (Inc3). Continue Automated Digital Network System and Full Motion Video implementations - (TR 2.1.1). Mature Family of Systems (FoS) Community of Interest data model development for TacMobile SOA environment instantiation with Extensible Markup Language (XML) schema and Tactical Operations Center Mobile Tactical Operations Center Content Management XML Data Dictionary - (Inc 3). Continue evolving TacMobile Data Strategy, Information Support Plan, and Capabilities Production Document for Increment 3, supporting P-8A Poseidon Inc 3 - (Inc 3). Finalize TOC/MTOC Operational view					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and System view Department of Defense Architecture Framework (DoDAF) products, and integrate to the Maritime Patrol and Reconnaissance Force /Air Anti-Submarine Warfare Community of Interest FoS DoDAF products - (Inc 3). Continue review of TacMobile Concept of Operations (CONOPS) in alignment with Family of Systems CONOPS and P8 CONOPS - (TR 2.1.1). Mature identifying requirements to evolve legacy point to point exchanges of information to utilize Services Oriented Architecture and new technologies and down select sustainable technologies - (Inc 3). Mature refining Measures of Effectiveness to maintain integrated requirements management with Increment 3 architecture elements - (Inc 3). ***FY 2018 Base Plans:*** Continuing FY18 requirements and funding are consolidated under "TacMobile Increment 2.1" and "TacMobile Increment 3.0" efforts within this PE. ***FY 2018 OCO Plans:*** N/A					
Title: Tactical Mobile Acoustic Support System (TACMASS) ***Articles:*** ***FY 2016 Accomplishments:*** Completing implementation of P-8A Poseidon Increment 2 Engineering Change Proposal (ECP) 2 - (FR40) and prepared to commence implementation of P-8A Poseidon Increment 2 ECP 3 - (FR50 / Inc 3). Finalizing designs to commence development of TacMobile Multistatic Active Coherent Attack system in support of P-8A Poseidon Increment 3 upgrades - (Inc 3). ***FY 2017 Plans:*** Validate and test P8 Increment 2 Engineering Change Proposal (ECP) 3 Multistatic Active Coherent (MAC) upgrades and functionality (TR 2.1.1). Mature requirements development for MAC Enhancements (MAC-E) and commence design of MAC-E - (Inc 3). ***FY 2018 Base Plans:*** Continuing FY18 requirements and funding are consolidated under "TacMobile Increment 2.1" and "TacMobile Increment 3.0" efforts within this PE. ***FY 2018 OCO Plans:*** N/A	0.736 -	0.736 -	0.000 -	0.000 -	0.000 -
Title: Aircraft Interfaces ***Articles:***	0.883 -	0.883 -	0.000 -	0.000 -	0.000 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Continued test and production of P8 Poseidon Increment 2 Engineering Change Proposal (ECP) 1 and ECP 2 required TacMobile support - (TR 2.1.1). Continued supporting all P-8A Poseidon Increment 2 Operational Evaluations - (TR 2.1.1). Finishing Advanced Airborne Systems (AAS) and TacMobile stack integration - (TR 2.1.1). Supported P8 Poseidon Increment 3 Applications Based Architecture Preliminary Design Review (PDR) 1 and Test and Evaluation prototype development - (Inc 3). Began to integrate interface design for Net Enabled Weapon and T-Sized Stores - (Inc 3). Finalized implementation of P-8A Poseidon Fly Away Kits, for media grooming and split deployment support - (TR 2.1.1). ***FY 2017 Plans:*** Complete testing of TacMobile support for P8 Poseidon Increment 2 Engineering Change Proposal (ECP) 1 and ECP 2 - (TR 2.1.1). Complete support for all P-8A Poseidon Increment 2 Operational Evaluations - (TR 2.1.1) Conduct end to end development testing of Advanced Airborne Systems (AAS) and TacMobile stack integration, prepare to support AAS Initial Operational Test and Evaluation (IOT&E) - (TR 2.1.1). Continue support P8 Poseidon Increment 3 Applications Based Architecture Design Reviews and Test and Evaluation prototype development - (Inc 3). Integrate support for Net Enabled Weapon and T-Sized Stores - (TR 2.1.2). Begin integration of P-8A media grooming and Command Control Communications Computers Intelligence (C41) Fly Away Kits - (TR 2.1.1). Install TacMobile Advanced Airborne Sensor (TMAAS) stack Engineering Development Model in Tactical Operations Center Jacksonville for Operational Testing (TR 2.1.1 Ph2). ***FY 2018 Base Plans:*** Continuing FY18 requirements and funding are consolidated under "TacMobile Increment 2.1" and "TacMobile Increment 3.0" efforts within this PE. ***FY 2018 OCO Plans:*** N/A					
Title: Tactical Data Links	0.160	0.160	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Completed design for selected Tactical Targeting Network Technology and Multifunctional Information Distribution System Joint Tactical Radio System Courses of Action - (TR 2.1.1.2). Defined requirements analysis on Common Data Link Upgrade, Broadcast Intelligence Analysis, Joint Range Extension, Third Party Targeting, High Frequency Internet Protocol, Link 16 updates - (TR 2.1.1.2). ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Commence communications upgrade design/integration/development including New Technology-Common Data Link Upgrade, Broadcast Intelligence Analysis, Joint Range Extension, Third Party Targeting, High Frequency Internet Protocol, and Link 16 updates (TR 2.1.2 /Inc 3). ***FY 2018 Base Plans:*** Continuing FY18 requirements and funding are consolidated under "TacMobile Increment 2.1" and "TacMobile Increment 3.0" efforts within this PE. ***FY 2018 OCO Plans:*** N/A					
Title: Enterprise Solutions	0.780	0.880	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued maturing the Applications Based Architecture (ABA) requirements definition in preparation to commence ABA design and development for TacMobile systems - (Inc 3). Completed Data Storage Architecture Upgrade development and implementation - (TR 2.1.1). Continued development of Multiple Security level Enclaves and conducted requirements definition and analysis to commence design of Distributed Common Ground System Navy implementation - (Inc 3). Conducted technology evaluation and requirements definition for development of next generation Mass Storage requirement - (Inc 3). ***FY 2017 Plans:*** Continue Applications Based Architecture (ABA) requirements analysis, and continue ABA design and development for implementation on TacMobile systems - (Inc 3). Complete Data Storage Architecture Upgrade integration to support follow on test and evaluation - (TR 2.1.1). Continue development of Multiple Security level Enclaves and design of Distributed Common Ground System Navy implementation - (Inc 3). Continue development of next generation Mass Storage requirement - (Inc 3). ***FY 2018 Base Plans:*** Continuing FY18 requirements and funding are consolidated under "TacMobile Increment 2.1" and "TacMobile Increment 3.0" efforts within this PE. ***FY 2018 OCO Plans:*** N/A					
Title: Command and Control (C2)	0.402	0.607	0.000	0.000	0.000
Articles:	-	-	-	-	-

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Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 0486 / *Tactical Support Center*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Completed preparation for Tactical Operations Center Operational Control Prototype Services Oriented Architecture (SOA) design leveraging P-8A Applications Based Architecture, completed TacMobile SOA requirements analysis to commence design/development, leveraging Poseidon Data modeling, security, applications and architecture - (Inc 3). Completed requirements analysis, continued development, and commenced implementation of Advanced Airborne Sensor system as part of TacMobile (TM) Multiple Independent Levels of Security - (TR 2.1.1). Completed evaluation of Global Command and Control System - Maritime Group Level 4.1 in support of Triton Mission Control System interface and conducted requirements analysis to assess next generation Maritime Tactical Command and Control - (TR 2.1.1). ***FY 2017 Plans:*** Further mature Tactical Operations Center Operational Control Prototype Services Oriented Architecture (SOA) design leveraging P-8A Applications Based Architecture into TacMobile SOA requirements analysis and design/development including Cross Domain Solutions. Continue to leverage Poseidon Data modeling, security, applications and architecture - (Inc 3). Continue Engineering Development Model development with High Assurance Guard, and continue implementation of Advanced Airborne Sensor system as part of TacMobile Multiple Independent Levels of Security - (Inc 3). Integrate Global Command and Control System - Maritime Group Level 4.1 in support of Triton Mission Control System interface and continue requirements analysis to assess next generation Maritime Tactical Command and Control - (TR 2.1.1 / TR 2.1.2). ***FY 2018 Base Plans:*** Continuing FY18 requirements and funding are consolidated under "TacMobile Increment 2.1" and "TacMobile Increment 3.0" efforts within this PE. ***FY 2018 OCO Plans:*** N/A					
Title: Maritime Patrol and Reconnaissance Force (MPRF) Interoperability/TacMobile Footprint Reduction	1.022	1.040	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued design model development of automated TacMobile system functionality to reduce operator workload, to offset increasing Maritime Patrol and Reconnaissance Force Intelligence Surveillance and Reconnaissance Mission/Function/Task -(Inc 3). Completed stakeholder Size Weight Power and Cooling requirements analysis and commenced Tactical Operations Center (TOC)/Mobile Tactical Operations Center (MTOC) design - (TR 2.1.1). Continued implementing all hardware design optimizations which reduce and consolidate TacMobile					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 0486 / *Tactical Support Center*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
footprint and any Maritime Patrol and Reconnaissance Aircraft media changes - (TR 2.1.1). Commenced Wide Band SatCom requirements analysis and continued utilizing technology that best optimizes data transfer rates - (TR 2.1.2). Continued with development of Multiple Security level Enclaves, matured Higher than SECRET enclave's requirements analysis and design for TacMobile - (Inc 3). ***FY 2017 Plans:*** Refine design of TacMobile system functionality to reduce operator workload, to offset the increasing Mission/ Function/Task of the Maritime Patrol and Reconnaissance Force Intelligence Surveillance and Reconnaissance - (TR 2.1.1). Initiate stakeholder Size Weight Power and Cooling design analysis and commence TOC/ MTOC design - (TR 2.1.2/Inc 3). Complete implementing all hardware design optimizations which reduce and consolidate TacMobile footprint and any Maritime Patrol and Reconnaissance Aircraft media changes - (TR 2.1.1). Commence integration of P-8 Inc 3 Block 1 design elements - (TR 2.1.1). Commence Wide Band SatCom design utilizing technology that continues best optimizes data transfer rates - (TR 2.1.2 /Inc 3). Continue with development of Multiple Security level Enclaves, mature Higher Than SECRET enclave's requirements analysis and design for TacMobile - (Inc 3). Continue defining Processing Exploitation and Dissemination support requirements for the wide range of P8A missions and Anti-Submarine Warfare and Intelligence Surveillance and Reconnaissance data elements - (Inc 3). ***FY 2018 Base Plans:*** Continuing FY18 requirements and funding are consolidated under "TacMobile Increment 2.1" and "TacMobile Increment 3.0" efforts within this PE. ***FY 2018 OCO Plans:*** N/A					
Title: TacMobile Increment 2.1 ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Efforts previously funded within this PE under "Net Ready", "Tactical Mobile Acoustic Support System (TACMASS)", "Aircraft Interfaces", "Tactical Data Links", "Enterprise Solutions", and "MPRF Interoperability/ TacMobile Footprint Reduction" requirements were consolidated under "TacMobile Increment 2.1" in FY18.	0.000 -	0.000 -	2.181 -	0.000 -	2.181 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 0486 / *Tactical Support Center*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Begin phased design and engineering of Technical refresh 2.1.2, including P-8A/Poseidon and MQ-4C/ Triton interoperability related communications upgrades (Global broadcast System (GBS), Super High Frequency (SHF) and Tactical Data Links (TADIL); Command, Control, Communications and Intelligence (C4I) enhancements (Common Operational Picture (COP) and Integrated Broadcast Service (IBS)), and appropriate subsystem refreshes based on P-8A and MQ-4 collaborative efforts. These efforts include: INTEROPERABILITY: Continue Automated Digital Network System and Full Motion Video implementations following external stakeholder transition to ADNS Inc 3 infrastructure - (TR 2.1.1/2.1.2). SYSTEM UPGRADES: Continue design model development of automated TacMobile system functionality to reduce operator workload, and offset increasing Maritime Patrol and Reconnaissance Force Intelligence Surveillance and Reconnaissance Mission/Function/Task - (TR 2.1.1); Implement fleet change requests into TR 2.1.2 - (TR 2.1.2); Complete design and integration for selected Joint Tactical Radio System (BU-2) - (TR 2.1.2). MODERNIZATION: Complete integration of follow on Ultra High Frequency (UHF)/Very High Frequency (VHF) Satellite Communications (SATCOM) sub system - (TR 2.1.1); Evaluate options for Global Broadcast System subsystem modernization - (TR 2.1.2); Evaluate options for SHF subsystem modernization - (TR 2.1.2); Evaluate options for Tactical Data Links modernization - (TR 2.1.2); Complete requirements analysis, assess options, and begin integration of solutions to modernize or replace current generation Global Command and Control System Maritime - (TR 2.1.2). ***FY 2018 OCO Plans:*** N/A					
Title: TacMobile Increment 3.0 ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Effort previously funded within this PE under "Net Ready", "Tactical Mobile Acoustic Support System (TACMASS)", "Aircraft Interfaces", "Tactical Data Links", "Enterprise Solutions", and "MPRF Interoperability/ TacMobile Footprint Reduction" requirements were realigned to "TacMobile Increment 3.0" in FY18.	0.000 -	0.000 -	3.484 -	0.000 -	3.484 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 0486 / *Tactical Support Center*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue development for TacMobile Increment 3 in preparation for P-8A and other Integrated Test events in FY19. Complete updates to Increment 3 Capabilities Production Document (CPD) based upon Joint Requirements Oversight Council (JROC) and Fleet review. These efforts include: INTEROPERABILITY: Design and develop TacMobile architecture for P-8A Applications Based Architecture (ABA) interface. Build Engineering Development Model with appropriate P-8A ABA interface to enable net ready application - (Inc 3.0); Complete TacMobile Data Strategy and Information Support Plan for Increment 3.0, supporting P-8A Poseidon Inc 3 - (Inc 3.0); Design and develop TM architecture/interface for P-8A Anti-Submarine Warfare (ASW) Signals Intelligence (SIGINT) and track management requirements in support of P-8A mission systems - (Inc 3.0); Mature requirements development for Multistatic Active Coherent (MAC) Enhancements (MAC-E) and commence design for MAC-E integration - (Inc 3.0); Continue communications upgrade design/integration/ development for P-8A interoperability and optimization: Common Data Link Upgrades, Broadcast Intelligence Analysis, Joint Range Extension, Third Party Targeting, High Frequency Internet Protocol, Link 16 updates, and Wideband SatCom design/technology implementation - (Inc 3.0); Further mature architecture, development and integration of Multiple Security Level enclaves or common solution to remain interoperable with P-8A security interfaces - (Inc 3.0); Interface with Intelligence community to define Processing, Exploitation, and Dissemination CONOPS and reach-back support requirements for integrating the wide range of P-8A missions and Anti-Submarine Warfare and Intelligence Surveillance and Reconnaissance data elements with the Maritime Intelligence Surveillance and Reconnaissance Environment. Implement data strategy with automation, SOA, and other schemas for increased interoperability and efficiency - (Inc 3.0); Develop TacMobile environment to align with Family of Systems Community of Interest data management model schema - (Inc 3.0); Finalize TOC/MTOC Operational view and System view Department of Defense Architecture Framework (DoDAF) products and align with the Maritime Patrol and Reconnaissance Force /Air Anti-Submarine Warfare Community of Interest Family of Systems Department of Defense Architecture Framework products - (Inc 3); Continue integration of Navy enterprise solutions for Common Operational Picture (COP) management (in synch with Distributed Common Ground System Navy (DCGS-N), Undersea Warfare-Decision Support System (USW-DSS)) - (Inc 3.0). SYSTEM UPGRADES: Continue building Engineering Development Model with interfaces to P-8A system upgrades and TacMobile Multiple Independent Levels of Security - (Inc 3.0); Implement fleet and engineering change requests into Inc 3 design - (Inc 3.0). MODERNIZATION: Continue integration of next generation Mass Storage solution - (Inc 3.0); Continue integration of enterprise solutions for Multiple Security Level networks - (Inc 3.0); Complete Services Oriented Architecture (SOA) requirements analysis. Begin TM modernization development efforts to integrate SOA architecture - (Inc 3.0); Continue stakeholder Size Weight					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 0486 / *Tactical Support Center*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Power and Cooling (SWAPC) design analysis and integrate SWAPC reductions into TOC/MTOC design - (Inc 3.0). ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	4.921	5.244	5.665	0.000	5.665

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2246: *MPRF Mission Support*	13.725	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	90.351
• OPN/2906: *TacMobile*	13.600	27.927	31.925	7.900	39.825	31.371	32.120	32.784	32.901	Continuing	Continuing

Remarks

Maritime Patrol & Reconnaissance Force (MPRF) Mission Support Systems
OPN-BLI2906 funding summary only reflects TacMobile portion of the BLI funding

D. Acquisition Strategy

Evolutionary Acquisition - Increment 2.0 provided enhanced Beyond Line of Sight (BLOS) Global Information Grid (GIG) reach back capability, and supports Maritime Situational Awareness connectivity enhancements for data exchange with Maritime Patrol and Reconnaissance Force (MPRF) aircraft and with Coalition data networks. It incorporated Anti-Submarine Warfare (ASW) acoustical analysis improvements and new P-3C aircraft ASW interfaces. Increment 2.1 supported migration to follow on Global Command and Control System - Maritime (GCCS-M) version 4.0.3 and introduction of the P-8A Poseidon. Tech Refresh 2.1.1 supports technical engineering changes associated with the introduction of P-8A Poseidon Increment 2, MQ-4C Triton, Advanced Airborne Sensor (AAS), migration to GCCS-M 4.1 Group Level, and transition to WIN7 baselines. Increment 3 will incorporate support for other Maritime Patrol and Reconnaissance Force (MPRF) Family of Systems (FOS) Aircraft Systems, as they transition to a Services Oriented Architecture (SOA).

E. Performance Metrics

The primary metrics utilized by the TacMobile program development process, include achieving/maintaining all required Interface Exchange Requirements (IER's) and successful achievement of 100% of Key Performance Parameters for incremental upgrade threshold capabilities, as observed by Commander Operational Test Force representatives during Operational Evaluation. TacMobile Inc 2.1 development supported increased IER requirements of 486% from 112 to 544. Development to support these new IER's tapered off in FY-12 as the Increment entered the Operational Evaluation Phase. Development focus then shifted to efforts required to retain fielded IER's and update IER's to comply with emerging and evolving standards associated with P-8A Poseidon Increment 2, and the MQ-4C Triton Unmanned Aerial System (UAS), other Maritime Patrol and Reconnaissance Force (MPRF) Family of Systems (FOS) Aircraft and Systems, and evolving operational employment concepts. Increment 3 development will increase IER's by extending the TacMobile core to extend integrated capabilities into Higher Than SECRET enclaves and Services Oriented Architecture (SOA). The quantification of the increase in IER's will be dependent upon final requirements which are still being defined.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 2213 / *Mission Planning*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2213: *Mission Planning*	319.764	38.993	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	358.757
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Starting in FY17, Mission Planning (PU 2213) portion of the Tactical Command PE has been moved to Mission Planning PE (0605215N). The Joint Mission Planning System (JMPS) is the designated automated mission planning system for the Navy. JMPS enables weapon system employment by providing the information, automated tools, and decision aids needed to rapidly plan aircraft, weapon, or sensor missions, load mission data into aircraft and weapons, and conduct post-mission analysis. JMPS is a mission critical system which is a co-development effort between the United States Navy (USN) and United States Air Force (USAF). Common requirements are identified and capabilities are developed and prioritized in an evolutionary approach. An individual JMPS Mission Planning Environment (MPE) is a combination of the JMPS framework, common components, and the necessary system hardware required to satisfy mission planning objectives. Most Tactical Naval Aviation platforms are dependent solely on JMPS to plan precision guided munitions, sensor systems, tactical data links, secure voice communications, and basic Safety of Flight functions. Over 40 (T/M/S) naval aircraft are supported by JMPS. All T/M/S are required to transition to Microsoft Windows 7 due to End of Life (EOL) of Microsoft XP (April 2014) using Framework (FW) Version 1.3.5. Custom support for Windows XP is planned to allow remaining naval aircraft to be supported during the transition. Future JMPS platforms include; MQ-4C (Triton), P-8, and CH-53K. The re-architecture of JMPS will support net-centric goals by providing route "publish and subscribe" capabilities, transition to 64-bit allows for memory space expansion to accommodate future Microsoft Operating Systems, emerging technologies, and critical Cybersecurity updates. Funding profile includes JMPS baseline efforts for all existing T/M/S on Windows 7 32-bit framework while concurrently re-architecting to 64-bit framework. Increment 4 which encompasses 64-bit development requires complete software restructure to address memory limitations and system errors resulting in JMPS computer crashes. The transition from the current 32-bit architecture (4GB RAM) to a 64-bit architecture (196GB RAM) provides additional memory access, increased planning efficiencies; creating increased stability in the architecture resulting in fewer fleet memory crashes. Delaying JMPS 64-bit transition to the fleet will allow system crashes to continue.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: JMPS Framework (FW) & Common Components (CC) Development	19.836	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Due to the end of Microsoft support for Windows XP in April 2014, JMPS framework (FW) is required to transition to Windows Operating System (OS) 7. FW Version 1.3.5 incorporates Windows OS 7 and provides additional capabilities for all naval aircraft to include air drop, air refueling and enhanced installation. Funding for FW will be used to support system engineering processes, management interface controls, software architectural analysis, requirements management and a centralized website for Mission Planning Environment (MPE) developers. FW 1.5 will be incorporated in future FW versions to address migration to .NET environment and to enable interoperability improvements through utilization of services. FW 64 bit development efforts commenced in FY14. If a transition to 64-Bit architecture is delayed or minimized, the fleet will experience					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
increased mission planning interruptions (crashes) with future Mission Planning Environments (MPE) as a result of legacy and new 32-Bit applications shared utilization of the 4G RAM limitation associated with 32-bit operating system (64-Bit provides 192GB RAM). Additionally, as platform(s) requirements emerge for new and enhanced mission planning capabilities, the demand for more complex integrated applications and software products increases. Without this planned transition to a 64-Bit architecture, the volume of integrated mission planning capability for the fleet will be limited and restricted. Common Components software updates augment core mission planning capabilities across multiple T/M/S. ***FY 2016 Accomplishments:*** Continue the development of JMPS Increment 4 Core 64-bit Framework transition development activities. Major events include development of Cybersecurity safeguards, development of additional JMPS help features, and complex conversion of Source Lines of Code (SLOC) from Visual Basic to a newer .NET language for the JMPS Framework Core (Basic Flight Planning Capabilities) and JMPS Framework Common Components for MPE/UPCs, including significant efforts for the F/A-18 A-F platforms and E/A-18G. In addition, efforts include initiation of 64-bit transition development for JMPS Common Components used by multiple platforms. Common Components include Close-Air Support (CAS), Air Refueling, Air Drop, Intervisibility Mask (IVM), Global Positioning System (GPS) Crypto, and GPS Predictor capabilities. The transition of these Common Components is aligned to meet the platform(s) requirements for new and enhanced mission planning capabilities in a 64-bit environment. The Increment 4/64-bit transition is required to address current physical memory access and utilization limitations associated with the fielded Mission Planning Environment (MPE); thus eliminating system interruptions (crashes) while improving mission planning performance for the fleet. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Joint Mission Planning System Expeditionary (JMPS-E)	0.646	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: JMPS Expeditionary (JMPS-E): The goal of the JMPS-E team is to produce a scalable, tailorable, mission planning and execution monitoring tool for Amphibious Squadron staffs. The primary focus of this system is to provide an automated capability to assist planners with mission analysis, course of action					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
development and automated creation of doctrinal orders based on planning data in the system. Current expeditionary planning is done manually on paper charts. JMPS-E will provide a digital map enabling better response times to changing plans, easier distribution of planning artifacts and a reduction in human error during the planning process. The variety and geographically separated nature of forces involved with Ship to Shore Maneuver amplifies the need for web-based technologies to enable collaborative planning, improve overall situational awareness and enable the monitoring of mission execution from different locations. The primary outputs are tasking orders, route plans, battlespace geometries and decision briefs. The system will also incorporate modeling and simulation tools to rehearse and deconflict mission plans. ***FY 2016 Accomplishments:*** Complete development and intermediate testing of JMPS-E MPE Version 2.0.1. Development of JMPS-E MPE Version 2.1 (64-bit OS) ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Mission Planning Environment (MPE) Integration and Test ***Articles:***	18.511 -	0.000 -	0.000 -	0.000 -	0.000 -
Description: Mission Planning Environment (MPE) Integration and Test efforts support the Navy's developmental testing/operational testing, integration and system of system testing for MPE fielding. Efforts consist of integration of components provided by various developers into a platform-centric MPE and testing of the integrated MPE. Life-cycle management, with MPE integration and testing results in a consistent and repeatable system configuration that enables stability and reliability. Due to the end of Microsoft support for Windows XP in April 2014, JMPS MPE's are currently in the process of transitioning to Windows Operating System (OS) 7; with custom support available for the transition of all remaining naval aircraft. ***FY 2016 Accomplishments:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Integration and test of MPEs in support of over 40 aircraft T/M/S. Triton and CH-53K platform integration to meet IOC. Initiation of efforts associated with JMPS 64-bit Framework segmentation efforts. Complete Joint Mission Planning System Windows 7 operating system transition for all platforms. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	38.993	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2876: *Naval Mission Planning Systems*	13.737	14.273	11.971	2.550	14.521	12.188	12.408	12.660	12.911	Continuing	Continuing
• RDTE/3858,5302,5380: *Air Force Mission Plng Systems*	55.835	78.323	75.567	-	75.567	75.113	87.771	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

Engineering Manufacturing Development efforts: The strategy entails a two-phased evolutionary approach to acquire the initial Joint Mission Planning System (JMPS) development effort. Phase I was a combined United States Air Force (USAF) / United States Navy (USN) effort that obtained various studies, extensive joint requirements analysis, design to cost estimates, an architecture concept, and development statement of work. The Program's Phase I was planned to identify reduced costs strategies through software reuse from both USN Tactical Automated Mission Planning Systems and USAF Air Force Mission Support Systems (AFMSS) legacy mission planning programs. Additionally, this phase provided a risk reduction plan by identifying the most effective migration of existing mission planning systems. Phase I was awarded to two contractors, Post Phase I during the down select process, one contractor was selected to develop the JMPS architecture work and Version 1.0 basic flight planning components. Phase II focused on strike planning requirements (i.e., support Precision Guided Missions and other tactical data load intensive missions) in order to migrate platforms from legacy mission planning systems to JMPS. The USAF continued development of JMPS Version 1.3 and has contractual control of the program which is facilitated via a Mission Planning Enterprise Contract. The USN continued limited development in JMPS Version 1.2 which was focused on helicopter platform migrations. USN integration and fielding strategy changed to support a Mission Planning Environment focus, where framework and common components are integrated as bundled packages and fielded by airwings. The completion of Phase II is targeted for Joint Mission Planning System (JMPS) Version

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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1.3.5, which focuses on a transition to Windows 7 that both the USAF and USN will use. As platforms plan their migration to JMPS, the acquisition strategy, plan, and baseline will be updated in order to drive the retirement of legacy mission planning systems.

E. Performance Metrics

Average time to plan a flight: Threshold value is < 1 hour average time to plan a flight that includes a Military Training Route (MTR), routing to and from the MTR, kneeboard card production, Instrument Flight Rules (IFR) flight planning materials and a Data Transfer Device (DTD) Load.
Objective value is < 30 minutes average time to plan a flight that includes a MTR, routing to and from the MTR, kneeboard card production, IFR flight planning materials and a DTD Load.

Interoperability: Threshold value is 100% of top level Interoperability Exchange Requirements (IERs) designated critical will be satisfied.
Objective value is 100% of top level IERs will be satisfied.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3032: *NTCSS (Naval Tactical Command Spt Sys)*	73.323	11.390	13.610	4.044	-	4.044	0.000	0.000	0.000	0.000	0.000	102.367
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Naval Tactical Command Support System (NTCSS) is a multi-function program designed to provide standard tactical support information systems to various afloat and associated shore-based fleet activities. The mission is to provide the Navy and Marine Corps with an integrated, scalable system that supports the management of logistical information, personnel, material, and funds required to maintain and operate ships, submarines, and aircraft. FY2018 Funding:

(1) Provides for the design, development, and testing of NTCSS Open Architecture (OA) development efforts to include: Global Individual Component Repair List (G-ICRL); Beyond Capability of Maintenance Interdiction (BCM-I); Operational Supply (O-Supply), which includes Table of Allowance & Personal Gear Issue (TOA/PGI) and Total Material Visibility & Requisition Management (TMV/RM); and software code conversion of NTCSS legacy software code to a modern Java software code system. (2) Provides for the transition of the current client-server architecture to a service-oriented architecture (SOA) and web-based services (NTCSS OA). This will align with the initiative to bring Navy systems into a common computing environment afloat, interface with Navy Enterprise Resource Planning (ERP) ashore, and provide a more flexible system platform with greater responsiveness to security, information assurance, functional, and system requirements and with greater speed to capability.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: NTCSS (Naval Tactical Command Spt Sys)	11.390	13.610	4.044	0.000	4.044
Articles:	-	-	-	-	-
Description: Maintenance and Supply Management Capability					
FY 2016 Accomplishments: Completed development of Beyond Capability of Maintenance Interdiction (BCM-I) design. Continued design, development, and testing efforts for NTCSS Open Architecture (OA), to include Global Individual Component Repair List (G-ICRL); O-Supply to include Table Of Allowance & Personal Gear Issue (TOA/PGI); Total Material Visibility & Requisition Management (TMV/RM), and software code conversion of NTCSS legacy software code to a modern JAVA-based system. Conducted pre-acquisition activities for open architecture follow-on efforts.					
FY 2017 Plans: Conducted Developmental Testing (DT) of BCM-I and G-ICRL. Continue software code conversion of the Relational Supply (R-Supply) application. Continued pre-acquisition activities for open architecture follow-on efforts. Commenced software conversion efforts for Optimized Intermediate Maintenance Activity (OIMA)					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3032 / *NTCSS (Naval Tactical Command Spt Sys)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and Optimized Organizational Maintenance Activity (OOMA) Naval Aviation Logistics Command Management Information System (NALCOMIS) applications, converting six million lines of NTCSS legacy software code to a modern Java-based system providing a more flexible system platform with greater responsiveness to security, information assurance, functional, and system requirements and with greater speed to capability (this effort transitions to Naval Operations Business Logistics Enterprise (NOBLE) project 3260 in this PE). ***FY 2018 Base Plans:*** Conduct DT and Operational Testing (OT) for O-Supply to include TOA/PGI. Complete software code conversion of the R-Supply application. Complete pre-acquisition activities for open architecture follow-on efforts. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	11.390	13.610	4.044	0.000	4.044

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2611: *Naval Tactical Command Support System*	14.416	12.336	10.741	-	10.741	9.946	17.657	18.015	18.375	Continuing	Continuing

Remarks

D. Acquisition Strategy

NTCSS Open Architecture (OA), Global Individual Component Repair List (G-ICRL) and Beyond Capability of Maintenance Interdiction (BCM-I), and O-Supply serve as the initial steps toward achieving the NTCSS OA "End-State" by introducing web-enabled technology, promoting data sharing with operational fleet forces, and utilization of Navy Data Centers to expose data and move workload ashore. Additionally, the software code conversion efforts will start the modernization of legacy software code applications into a modern Java software code (web-enablement). The Java code will incorporate current Information Technology (IT) best practices and eliminate current information assurance (IA) vulnerabilities experienced with a client/server system. This strategy provides the foundation for NTCSS to migrate to a full service-oriented architecture-based enterprise system.

E. Performance Metrics

NTCSS Open Architecture (OA), G-ICRL and BCM-I, eliminate documentation inefficiencies at the Fleet Readiness Centers (FRCs). O-Supply (Table of Allowance & Personal Gear Issue (TOA/PGI) and Total Material Visibility & Requisition Management (TMV/RM) provide centralized and standardized management of PGI and TOA material through the utilization of Navy Data Centers. O-Supply prevents millions of dollars in operational forces obligation losses through improved requisition

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3032 / *NTCSS (Naval Tactical Command Spt Sys)*

management. Additionally, the software code conversion efforts will lay the foundation for migration to a service-oriented architecture (SOA) for NTCSS. SOA lowers system maintenance costs when compared to maintaining the current, client-server architecture.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3260: *Naval Operations Business Logistics Enterprise (NOBLE)*	0.000	0.000	0.000	19.102	-	19.102	35.038	31.721	20.202	5.191	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops and improves the Navy's tactical support information systems. It includes Naval Operational Supply System (NOSS), Naval Aviation Maintenance System (NAMS), Naval Operational Maintenance Enterprise (NOME), and Naval Administration and Personnel System (NAPS).

NOSS will provide enterprise-wide automation of supply, inventory, and financial functions to the Naval supply system. NOSS incorporates commercial best practices (e.g., Amazon, Wal-Mart, UPS, FedEx, etc.); NOSS will aggregate and analyze logistics data using business intelligence technologies, provide for total asset visibility, optimize business processes at the tactical echelon (field-level) and enterprise support activities, accelerate the ordering/re-ordering process, and permit monitoring of shipments. NOSS will maintain compliance with statutory, regulatory, and policy mandates of Financial Improvement Audit Requirements (FIAR). NOSS will aggregate and analyze operational data in a Business Intelligence (BI) framework to enable historical and predictive common operating pictures for logistics and readiness performance and requirements. FY2018 funding provides for acquisition documentation development to support a Milestone B/C decision. FY2018 funding provides for NOSS systems engineering analysis and design efforts leading up to a NOSS Build Decision 1 (BD1).

NAMS will provide an enterprise-wide aviation maintenance support capability that services all levels of aviation maintenance (organizational, intermediate, and depot) for over 2,100 Navy and Marine Corps aircraft. NAMS will identify and assign aviation artisans, and track all levels of aviation maintenance to completion. Aircraft availability and mission-capable rates will increase with the elimination of current inefficiencies; there will be a reduction in total ownership costs. FY2018 funding provides for software conversion efforts of Naval Aviation Logictics Command Management Information System (NALCOMIS) applications. FY2018 funding provides for NAMS acquisition documentation development to support a NAMS Milestone B/C decision leading to a NAMS BD1.

NOME will provide standardized operational business processes for afloat maritime maintenance activities to all naval ships. NOME will provide end-to-end component tracking, reduce administration time by identifying and assigning artisans to repair shipboard equipment, support moving major repair work ashore, and enable exploitation of embedded sensors in weapon systems that will trigger repair action notification. FY2018 funding provides for a NOME Analysis of Alternatives (AoA). FY2018 funding provides for NOME acquisition documentation development to support a NOME Milestone B/C decision leading to a NOME BD1.

NAPS will provide Navy-wide personnel and administration data sharing across shipboard and shore-based information systems. This will eliminate redundant personnel data entry, reduce total ownership costs, and standardize the way personnel and administration data are shared across the Navy. NAPS provides for the efficient use of maintenance personnel with better job/task and personnel skill matching. FY2018 funding provides for a NAPS AoA. FY2018 funding provides for NAPS acquisition documentation development to support a NAPS Milestone B/C decision leading to a NAPS BD1.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Naval Operational Supply System (NOSS)	0.000	0.000	14.202	0.000	14.202
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: N/A					
FY 2018 Base Plans: Develop acquisition documentation in support of a Naval Operational Supply System (NOSS) Milestone B/C decision leading to a Build Decision 1 (BD 1). Perform systems engineering analysis, system design efforts, and software development for NOSS BD 1.					
FY 2018 OCO Plans: N/A					
Title: Naval Aviation Maintenance System (NAMS)	0.000	0.000	2.400	0.000	2.400
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: N/A					
FY 2018 Base Plans: Continue software conversion/modernization efforts for Optimized Intermediate Maintenance Activity (OIMA) and Optimized Organizational Maintenance Activity (OOMA) Naval Aviation Logictics Command Management Information System (NALCOMIS) applications (previously funded under Naval Tactical Command Support System (NTCSS) 3032). Prepare/develop acquisition documentation in support of a NAMS Milestone B/C decision leading to a NAMS Build Decision 1 (BD 1).					
FY 2018 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: Naval Operational Maintenance Enterprise (NOME) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Conduct Analysis of Alternatives (AoA) for Naval Operational Maintenance Enterprise (NOME). Prepare/develop acquisition documentation in support of NOME Milestone B/C decision leading to a Build Decision 1 (BD 1). ***FY 2018 OCO Plans:*** N/A	0.000 -	0.000 -	1.500 -	0.000 -	1.500 -
Title: Naval Administration and Personnel System (NAPS) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Conduct Analysis of Alternatives (AoA) for NAPS. Prepare/develop acquisition documentation in support of a NAPS Milestone B/C decision leading to a BD 1. ***FY 2018 OCO Plans:*** N/A	0.000 -	0.000 -	1.000 -	0.000 -	1.000 -
Accomplishments/Planned Programs Subtotals	0.000	0.000	19.102	0.000	19.102

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

D. Acquisition Strategy

NOBLE will employ an evolutionary acquisition strategy. Software development will be comprised of multiple builds, each with increasing net-centric services capability. NOBLE is planned as a software-only program, dependent on the Navy Common Computing Environment (CCE). Hardware infrastructure will be provided by CANES, Integrated Shipboard Network System (ISNS), Navy Marine Corps Intranet (NMCI), Next Generation Enterprise Network (NGEN), OneNET (the OCONUS (outside of continental United States) network), and the Department of Navy commercial cloud computing environments. NOBLE's primary contracting method for software development will be competitive award.

E. Performance Metrics

Successfully achieve Milestone B/C decisions for NOSS, NAMS, NOME, and NAPS.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NOSS Software Development	TBD	TBD : TBD	0.000	0.000		0.000		12.077	Jul 2018	-		12.077	Continuing	Continuing	Continuing
NOSS System Engineering	WR	SPAWARSYSCEN PAC : San Diego, CA	0.000	0.000		0.000		0.375	Oct 2017	-		0.375	Continuing	Continuing	Continuing
NAMS System Engineering	WR	SPAWARSYSCEN : San Diego, CA	0.000	0.000		0.000		0.750	Oct 2017	-		0.750	Continuing	Continuing	Continuing
NOME Analyis of Alternatives (AoA)	TBD	TBD : TBD	0.000	0.000		0.000		1.500	Nov 2017	-		1.500	Continuing	Continuing	Continuing
NAPS AoA	TBD	TBD : TBD	0.000	0.000		0.000		1.000	Nov 2017	-		1.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		15.702		-		15.702	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NOSS Developmental Test & Evaluation (Documentation)	WR	NAVSUP : Mechanicsburg, PA	0.000	0.000		0.000		0.250	Oct 2017	-		0.250	Continuing	Continuing	Continuing
NOSS Operational Test & Evaluation (Documentation)	WR	COTF : Norfolk, VA	0.000	0.000		0.000		0.250	Oct 2017	-		0.250	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		0.500		-		0.500	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NOSS System Engineering Support	WR	SPAWARSYSCENPAC : San Diego, CA	0.000	0.000		0.000		0.250	Oct 2017	-		0.250	Continuing	Continuing	Continuing
NAMS System Engineering Support	WR	SPAWARSYSCENPAC : San Diego, CA	0.000	0.000		0.000		0.250	Oct 2017	-		0.250	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NOSS Program Management Support	C/CPFF	SeaPort : San Diego, CA	0.000	0.000		0.000		1.000	Nov 2017	-		1.000	Continuing	Continuing	Continuing
NAMS Program Management Support	C/CPFF	SeaPort : San Diego, CA	0.000	0.000		0.000		1.400	Nov 2017	-		1.400	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		2.900		-		2.900	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		19.102		-		19.102	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

Fiscal Year	2017				2018				2019				2020				2021				2022				2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones Naval Aviation Maintenance System (NAMS)									MS B/C ▲										BLD 1 FD ▲				BLD 2 FD ▲							
Software Deliveries NAMS															BLD 1 SW ▲						BLD 2 SW ▲									
Test & Evaluation Milestones NAMS																			BLD 1 DT/OT ▲				BLD 2 DT/OT ▲							

DT - Developmental Test; OT - Operational Test; AoA - Analysis of Alternatives; MS B - Milestone B; MS C - Milestone C; FD - Fielding Decision; BLD - Software Build

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

Fiscal Year	2017				2018				2019				2020				2021				2022				2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones Naval Operational Maintenance Enterprise (NOME)								AoA ▲				MS B/C ▲											BLD 1 FD ▲						
Software Deliveries NOME																				BLD 1 SW ▲								
Test & Evaluation Milestones NOME																							BLD 1 DT/OT ▲					

DT - Developmental Test; OT - Operational Test; AoA - Analysis of Alternatives; MS B - Milestone B; MS C - Milestone C; FD - Fielding Decision; BLD - Software Build

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

Fiscal Year	2017				2018				2019				2020				2021				2022				2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones Naval Administration and Personnel System (NAPS)							AoA ▲				MS B/C ▲												BLD 1 FD ▲						
Software Deliveries NAPS																			BLD 1 SW ▲									
Test & Evaluation Milestones NAPS																							BLD 1 DT/OT ▲					

DT - Developmental Test; OT - Operational Test; AoA - Analysis of Alternatives; MS B - Milestone B; MS C - Milestone C; FD - Fielding Decision; BLD - Software Build

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

Fiscal Year	2017				2018				2019				2020				2021				2022				2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones Naval Operations Supply System (NOSS)							MS B/C ▲									BLD 1 FD ▲				BLD 2 FD ▲								
Software Deliveries NOSS												BLD 1 SW ▲						BLD 2 SW ▲						BLD 3 SW ▲				
Test & Evaluation Milestones NOSS																BLD 1 DT/OT ▲				BLD 2 DT/OT ▲								

DT - Developmental Test; OT - Operational Test; AoA - Analysis of Alternatives; MS B - Milestone B; MS C - Milestone C; FD - Fielding Decision; BLD - Software Build

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3260				
Naval Administration and Personnel System (NAPS) Analysis of Alternatives (AoA)	3	2018	3	2018
Naval Operational Supply System (NOSS) Milestone B/C	3	2018	3	2018
Naval Operational Maintenance Enterprise (NOME) Analysis of Alternatives (AoA)	4	2018	4	2018
Naval Aviation Maintenance System (NAMS) Milestone B/C	1	2019	1	2019
NAPS Milestone B/C	3	2019	3	2019
NOME Milestone B/C	4	2019	4	2019
NOSS Build 1 Release	4	2019	4	2019
NAMS Build 1 Release	3	2020	3	2020
NOSS Build 1 Developmental/Operational Test (DT/OT)	4	2020	4	2020
NOSS Build 1 Fielding Decision (FD)	4	2020	4	2020
NOSS Build 2 Release	2	2021	2	2021
NAMS Build 1 Developmental/Operational Test (DT/OT)	3	2021	3	2021
NAPS Build 1 Release	3	2021	3	2021
NAMS Build 1 Fielding Decision (FD)	3	2021	3	2021
NOME Build 1 Release	4	2021	4	2021
NOSS Build 2 FD	4	2021	4	2021
NOSS Build 2 DT/OT	4	2021	4	2021
NAMS Build 2 Release	1	2022	1	2022
NAPS Build 1 Developmental/Operational Test (DT/OT)	3	2022	3	2022
NOME Build 1 Developmental/Operational Test (DT/OT)	3	2022	3	2022
NAMS Build 2 DT/OT	3	2022	3	2022

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3260 / *Naval Operations Business Logistics Enterprise (NOBLE)*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NOME Build 1 Fielding Decision (FD)	3	2022	3	2022
NAPS Build 1 Fielding Decision (FD)	3	2022	3	2022
NAMS Build 2 FD	3	2022	3	2022
NOSS Build 3 Release	4	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3320 / *TRIDENT Warrior*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3320: *TRIDENT Warrior*	11.305	2.143	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	13.448
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Trident Warrior (TW) was transferred from 0604231N to 0606355N from FY17 forward.

A. Mission Description and Budget Item Justification

TW enables early delivery of Information Warfare (IW) capabilities to the warfighter via Fleet-directed TW operational events. Integrates stand-alone systems and efforts to achieve substantially enhanced capability, demonstrates/tests these capabilities in both laboratory and operational environments, and evaluates their effectiveness. Develops supporting concepts and Concept of Operations to improve warfighting effectiveness. Coordinates IW efforts with other Service/Joint/Department of Defense/ National efforts to ensure Joint/Interagency/Allied/Coalition applicability and interoperability.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Trident Warrior	2.143	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: -Conducted analysis of TW 15 executed experiments and determined recommended next steps for Naval Warfare Development Center (NWDC). -In accordance with standardized procedures derived from experimentation best practices, coordinated TW participant efforts with specific goal identification, risk identification, and experiment plans to include data requirements and collection. -Coordinated TW participant efforts to achieve required installation and security certifications, accreditations and approvals. -Provided subject matter experts (SMEs) for core ship services during the experimentation period. -Provided independent experts to coordinate the establishment of, and compliance with, experiment plans and to lead analysis effort and provide unbiased assessment to decision makers for initiatives designated by NWDC. -Provided results to government sponsors to support the program's Planning, Programming, Budgeting, and Execution Process (PPBE) and engineering recommendations. -Planned and executed TW 16 operational events to accelerate the transition of IW capability to the Fleet. -Solicited participation for TW 17 and recommended inclusion of technologies responsive to identified Naval Capability Gaps.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3320 / *TRIDENT Warrior*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
-Provided subject matter expertise, analysis, and recommendations in order to help select technologies for participation in numbers supportable within resources. ***FY 2017 Plans:*** Trident Warrior (TW) was transferred from 0604231N to 0606355N from FY17 forward. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	2.143	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

TW is an annual operational experiment covering an 18-month process and is not associated with acquisition efforts.

E. Performance Metrics

Confirmation of Fleet and Joint Interoperability with technology candidates, Information Assurance Certification and Accreditation, and alignment with United States Fleet Forces (USFF) Commander's Guidance, and Systems Command (SYSCOM) Chief Engineer (CHENG) as well as related Program Executive Office (PEO) objectives and projected architectures.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3323 / *Maritime Tactical Command & Control (MTC2)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3323: *Maritime Tactical Command & Control (MTC2)*	30.857	14.976	14.293	17.487	-	17.487	19.223	10.727	20.041	12.469	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Maritime Tactical Command and Control (MTC2) is the next generation C2 software program that will deliver Battle Management Aids (BMA) and Maritime Planning Tools (MPT) to dynamically plan, direct, monitor, and assess maritime operations in support of Joint, Multi-Service, Coalition Forces planning. MTC2 will leverage a System of Services (SoServ) to deliver capabilities improving decision speed and dynamic synchronization of forces. BMAs/MPTs are small, capability-focused deliveries that can be rapidly developed, tested, and fielded. MTC2 will leverage Science and Technology (S&T) investments and will engage with the Navy Requirements Governance Board to define and prioritize the BMAs and MPTs that MTC2 will be on deliver and align to the Program Executive Office (PEO) enterprise architecture (Consolidated Afloat Network Enterprise Service (CANES), Agile Core Services (ACS)) for fielding to all echelons of command (Afloat and Ashore) within the Navy. The program's objective is to provide a suite of maritime applications (BMAs/MPTs) that enable planning, execution, monitoring, and assessment in support of operational and tactical level of war requirements. MTC2 will field BMAs/MPTs designed to provide automated and structured support for tactical and operational planning, decision-making, and execution. As a software-only program that leverages enterprise infrastructure, MTC2 will provide new and improved capabilities to include an Operational Planning Tool (OPT), an improved browser enabled map visualization that will enable the warfighter to associate tracks to relevant data, past and predicted movements, ingest Meteorology and Oceanography information, and operational overlays. MTC2's updated architecture will enable future composable C2 capabilities to respond to a more rapid pace in changes in threats and technology. Global Force Management - Data Initiative (GFM-DI) is the Department-wide enterprise solution that enables visibility/accessibility/sharing of data applicable to the entire DoD force structure. MTC2 will incorporate distributed data transfer capability for enhanced operational data exchange between command and control systems, combat systems, logistics, and intelligence systems for timely threat identification, location, and status alongside blue force data. MTC2 will be the program that fulfills a portion of the Navy's GFM-DI requirements.

FY 2018 funding will provide prototype development, integration, and testing for two BMA/MPTs, OPT and Navy Wave on the MTC2 Secure Internet Protocol Router Network (SIPRNET) Development Environment. OPT will provide the capability for a Carrier Strike Group (CSG) to create operations plans/schedules (i.e., 96-hour plan). Navy Wave will provide collaborative service that allows users to see other distributed planner's edits in real-time, and works in disconnected, intermittent, and limited (DIL) environments. The MTC2 SIPRNET Development Environment will be available to the fleet to provide feedback on improvements to OPT and Navy Wave BMA/MPTs. MTC2 will update the existing Service Oriented Architecture (SOA) prototype at Commander, Pacific Fleet (COMPACFLT) and Commander, Sixth Fleet (COMSIXTHFLEET) in FY18. MTC2 project prototype baseline comprised of OPT and Navy Wave BMA/MPTs will be demonstrated at Trident Warrior (TW) 18. FY18 MTC2 will also conduct pre-Milestone B/Build Decision program and acquisition activities which includes updating all statutory and regulatory documentation to meet Milestone B/Build Decision requirements. Upon successful Milestone B/Build Decision, MTC2 will initiate transitioning prototype capabilities to a program of record and initiating program of record development, integration and test activities.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3323 / *Maritime Tactical Command & Control (MTC2)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Maritime Tactical Command and Control (MTC2)	13.131	12.860	17.487	0.000	17.487
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Began pre-acquisition documentation in support of Milestone B in FY 2017. Completed Information Assurance (IA) certification and accreditation to support Navy Tactical Analytic Framework (NTAF) test event. Conducted testing in support of MTC2 NTAF risk reduction activities.					
FY 2017 Plans: Initiate Tactical Decision Aids and Planning Tools design and development. Begin development of MTC2 capabilities for Ballistic Missile Defense Tracks Situation Awareness and Aegis interfaces.					
FY 2018 Base Plans: Provide prototype development, integration, and testing for two Battle Management Aids (BMA) / Maritime Planning Tools (MPT), Operational Planning Tool (OPT), Navy Wave, and Distributed Data Transfer Service (DDTS) on the MTC2 Secure Internet Protocol Router Network (SIPRNET) Development Environment. Enable Fleet feedback for BMA/MPT improvement leveraging the MTC2 SIPRNET Development Environment. Field initial MTC2 project prototype baseline including OPT and Navy wave BMA/MPTs afloat. Update the existing Service Oriented Architecture (SOA) prototype at Commander, Pacific Fleet (COMPACFLT) and Commander, Sixth Fleet (COMSIXTHFLEET). Demonstrate MTC2 project prototype baseline including OPT and Navy Wave BMA/MPTs at Trident Warrior (TW) 18. Continue development to align to Program Executive Office (PEO) Command, Control, Communications, and Intelligence (C4I) enterprise architecture (Consolidated Afloat Networks and Enterprise Services (CANES) / Agile Core Services (ACS)). Conduct pre-Milestone B/ Build Decision program and acquisition activities including all statutory and regulatory documentation to meet Milestone B/Build Decision requirements. Hold a Milestone B/Build Decision and become a program of record. Continue integration and testing of designated GFM-DI capabilities for translation into the MTC2 prototype software baseline and begin integration and testing for fielding. Initiate transitioning prototype capabilities to a program of record and initiating program of record development, integration and test activities.					
FY 2018 OCO Plans: N/A					
Title: Global Force Management - Data Intiative (GFM-DI)	1.845	1.433	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3323 / *Maritime Tactical Command & Control (MTC2)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conducted integration and testing of designated GFM-DI capabilities for translation into the MTC2 B1 software baseline. ***FY 2017 Plans:*** Continue integration and testing of designated GFM-DI capabilities for translation into the MTC2 B1 software baseline. ***FY 2018 Base Plans:*** Beginning in FY18, GFM-DI plans and accomplishments will be moving under the MTC2 Project and Program of Record. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	14.976	14.293	17.487	0.000	17.487

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

MTC2 acquisition strategy will align to DoDI 5000.02 Model 3 Incrementally Deployed Software Intensive Program. MTC2 will execute a rapid software development acquisition strategy that is responsive to the fleet needs. Instead of a single Milestone C, software development will be comprised of multiple builds defined by Capability Drops (CDs) of increasing levels of net-centric services capability, with separate Annual Build Decisions. MTC2 will remain in the Risk Reduction prototype phase until Milestone B scheduled in FY 2017. MTC2 will be software only requiring the information technology infrastructure network and hardware provided by other network centric programs. MTC2's primary contracting method for software development will utilize Space and Naval Warfare Systems Command (SPAWAR) contracts. SPAWAR Systems Center - Pacific (SSC-PAC), San Diego, CA will be the designated Software Support Activity (SSA).

E. Performance Metrics

MTC2 performance metrics will be defined and approved during Milestone B projected for FY 2018.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3323 / *Maritime Tactical Command & Control (MTC2)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	SSC : San Diego, CA	5.074	1.618	Dec 2015	3.776	Dec 2016	4.095	Dec 2017	-		4.095	Continuing	Continuing	Continuing
Training Development	WR	SSC : San Diego, CA	1.252	0.543	Dec 2015	0.000		0.177	Dec 2017	-		0.177	Continuing	Continuing	Continuing
Integration, Assembly & Test	WR	SSC : San Diego, CA	13.929	7.146	Dec 2015	2.288	Dec 2016	0.000		-		0.000	0.000	23.363	23.363
Studies & Design	MIPR	Various : Various	1.764	0.000		0.000		0.000		-		0.000	0.000	1.764	1.764
Systems Engineering	C/CPFF	Various : Various	5.039	4.504	Jan 2016	2.132	Dec 2016	3.440	Dec 2017	-		3.440	Continuing	Continuing	Continuing
Software Development	C/CPIF	TBD : TBD	0.000	0.000		3.639	Jul 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Software Development	WR	SSC : San Diego, CA	0.000	0.000		0.695	Dec 2016	8.543	Dec 2017	-		8.543	Continuing	Continuing	Continuing
		Subtotal	27.058	13.811		12.530		16.255		-		16.255	-	-	-

Remarks

The FY18 increase in funding supports the increase in software development and systems engineering efforts associated with prototype development and integration of Battle Management Aids (BMA) / Maritime Planning Tools (MPT), Operational Planning Tools (OPT), Navy Wave, and Distributed Data Transfer Service (DDTS).

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support	WR	SSC : Norfolk, VA/ San Diego, CA	0.047	0.000		0.127	Dec 2016	0.107	Dec 2017	-		0.107	Continuing	Continuing	Continuing
Integrated Logistics Support	C/CPFF	SeaPort : San Diego, CA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	0.047	0.000		0.127		0.107		-		0.107	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	SSC : San Diego, CA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3323 / *Maritime Tactical Command & Control (MTC2)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support	WR	SSC : San Diego, CA	0.685	0.289	Dec 2015	0.000		0.000		-		0.000	0.000	0.974	0.974
Contractor Engineering Support	C/CPFF	SeaPort : San Diego, CA	0.476	0.000		0.225	Dec 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	SeaPort : San Diego, CA	2.553	0.876	Dec 2015	0.855	Dec 2016	0.890	Dec 2017	-		0.890	Continuing	Continuing	Continuing
Program Management Support	WR	SSC : San Diego, CA	0.000	0.000		0.556	Dec 2016	0.235	Dec 2017	-		0.235	Continuing	Continuing	Continuing
Management Services	Various	Various : Various	0.038	0.000		0.000		0.000		-		0.000	0.000	0.038	-
		Subtotal	3.752	1.165		1.636		1.125		-		1.125	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	30.857	14.976		14.293		17.487		-		17.487	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3323 / *Maritime Tactical Command & Control (MTC2)*

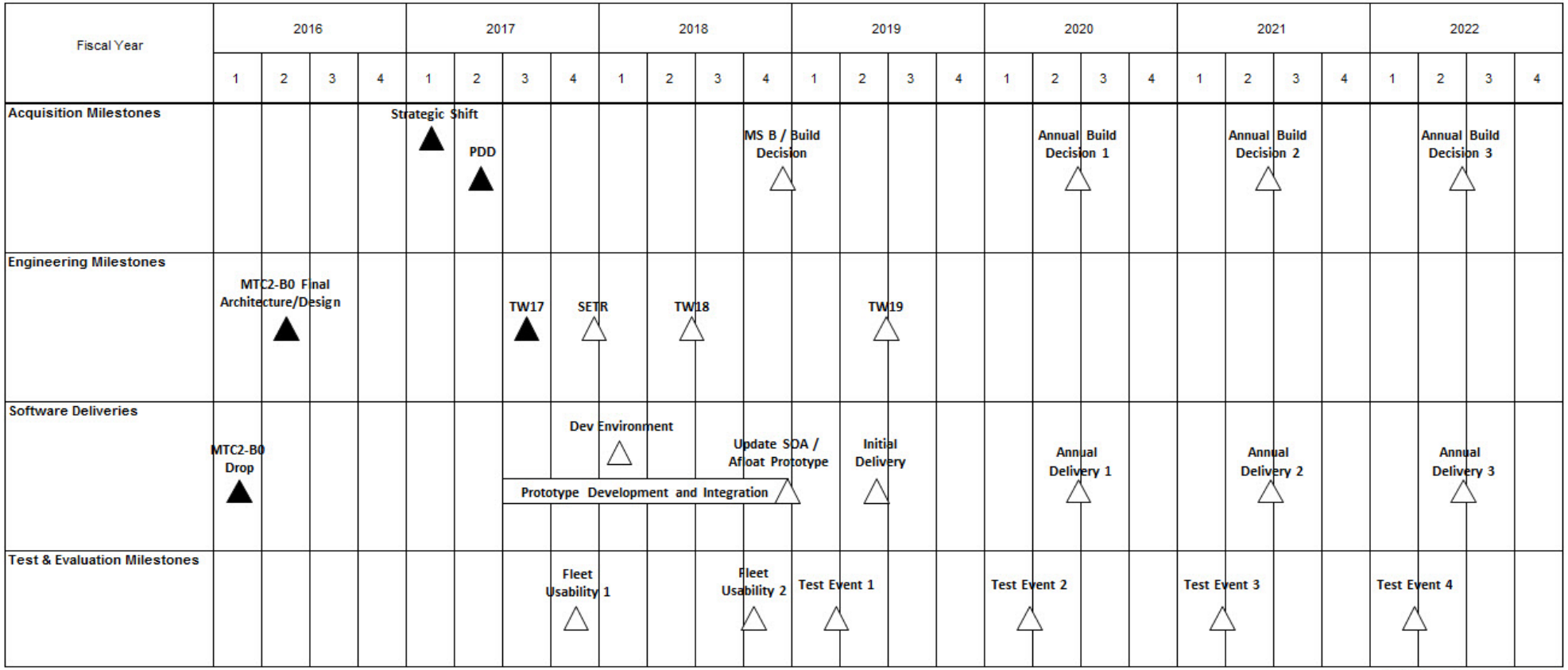

EXHIBIT R-4, Schedule Profile

Legend:

Dev - Development	PDD - Project Description Document
MS - Milestone	SETR - System Engineering Technical Review
MTC2 - Maritime Tactical Command and Control	SOA - Service Oriented Architecture
MTC2 B0 - Risk Reduction Software	TW - Trident Warrior

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3323 / *Maritime Tactical Command & Control (MTC2)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3323				
Program Strategic Shift Direction	1	2017	1	2017
Project Description Document (PDD)	2	2017	2	2017
Trident Warrior Fiscal Year 2017	3	2017	3	2017
Prototype Development and Integration	3	2017	4	2018
System Engineering Technical Review	4	2017	4	2017
Fleet Usability 1	4	2017	4	2017
Development Environment	1	2018	1	2018
Trident Warrior Fiscal Year 2018	2	2018	2	2018
Fleet Usability 2	4	2018	4	2018
Milestone B / Build Decision	4	2018	4	2018
Update Service Oriented Architecture (SOA) / Afloat Prototype	4	2018	4	2018
Test Event 1	1	2019	1	2019
Initial Delivery	2	2019	2	2019
Trident Warrior Fiscal Year 2019	2	2019	2	2019
Test Event 2	1	2020	1	2020
Annual Build Decision 1	2	2020	2	2020
Annual Delivery 1	2	2020	2	2020
Test Event 3	1	2021	1	2021
Annual Build Decision 2	2	2021	2	2021
Annual Delivery 2	2	2021	2	2021
Test Event 4	1	2022	1	2022

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3323 / *Maritime Tactical Command & Control (MTC2)*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Annual Build Decision 3	2	2022	2	2022
Annual Delivery 3	2	2022	2	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3324 / *Navy Air Operations Command and Control (NAOC2)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3324: *Navy Air Operations Command and Control (NAOC2)*	12.280	0.801	0.999	1.048	-	1.048	1.014	1.034	1.055	1.076	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Navy Air Operations Command and Control (NAOC2) integrates and tests Air Force program of record systems that provide an integrated and scalable planning system for standardized, secure, and automated decision support for Air Force, Joint, and Allied commanders worldwide. These programs provide automated air operations planning, execution management and intelligence capabilities at the Force level to include fleet commanders, numbered fleet commanders, Commander Carrier Strike Groups, Commander Expeditionary Strike Groups, Commander Landing Forces, and Joint Task Force Commanders. NAOC2 includes Theater Battle Management Core System (TBMCS) and Command and Control Air Operations Suite - Command and Control Information Services (C2AOS-C2IS). C2AOS-C2IS is being developed as a Service Oriented Architecture (SOA) service to allow for scalability and integration with Common Computing Environments (CCE). Continuation of these efforts will significantly enhance the Joint Force Air Component Commander and Combined Air Operations Center personnel to plan daily air operations including strike, airlift, offensive/defensive air, and refueling missions in support of combat operations, addressing the requirement of war fighter distributed planning and execution processes along with significantly improving Joint interoperability. TBMCS continues a hardware transition to CCEs such as Consolidated Afloat Networks and Enterprise Services (CANES). Currently, TBMCS is the key system that is used to conduct real world air planning in the Joint and Navy environments. C2AOS-C2IS will replace TBMCS in a SOA environment while bringing more flexibility to the war fighter. In FY 2018, the program will continue Navy integration and testing for Air Force developed C2AOS-C2IS, with focus on testing of three planned Capability Packages.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Command and Control Air and Space Operations Suite - Command and Control Information Services (C2AOS-C2IS) Integration and Testing	0.801	0.999	1.048	0.000	1.048
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Conducted final integration and Developmental Test, and Operational Test of initial C2AOS-C2IS modules to include Capability Package 1 (CP1) Air Tasking Order Management System (ATOMS), CP1 Request Information Services for Command and Control (RISC2), Capability Package 2 (CP2) Airspace Management Application/ Airspace Information Service (ASMA/ASIS), and CP2 Integrated Air and Missile Defense (IAMD) Planner.					
FY 2017 Plans: Begin integration and testing of Capability Package 3 (CP3) Air eXecution Information Systems (AXIS) and Air Status (AirSTAT), and begin integration and validation of the consolidated CP1/CP2/CP3 capabilities					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3324 / *Navy Air Operations Command and Control (NAOC2)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
to confirm full functionality on Navy infrastructure to include Consolidated Afloat Networks and Enterprise Services (CANES), ensuring increased Joint interoperability and enhanced capability including theater level air planning with distributed re-planning and execution processes. ***FY 2018 Base Plans:*** Continue integration and testing of Capability Package 1 (CP1)/Capability Package 2 (CP2)/Capability Package 3 (CP3) Request Information Services for Command and Control (RISC2) & Airspace Management Application/ Airspace Information Service (ASMA/ASIS), CP1/CP2 Integrated Air and Missile Defense (IAMD) Planner & Air Tasking Order Management System (ATOMS), CP3 Air eXecution Information Systems (AXIS), and CP3 Air Status (AirSTAT). Continue integration and validation of the consolidated CP1/CP2/CP3 capabilities to confirm full functionality on Navy infrastructure to include CANES, ensuring increased Joint interoperability and enhanced capability including theater level air planning with distributed re-planning and execution processes. Conduct Developmental Test and Ashore Operational Test of initial C2AOS-C2IS modules to include CP1 ATOMS, CP1 RISC2, CP2 ASMA/ASIS, CP2 IAMD Planner, CP3 AXIS, and CP3 AirSTAT. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.801	0.999	1.048	0.000	1.048

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Theater Battle Management Core System (TBMCS) and Command and Control Air Operations Suite - Command and Control Information Services (C2AOS-C2IS) are designed, developed, and delivered by the Air Force and will be integrated for a Navy Common Computing Environment (CCE) such as CANES. As a Joint interest program, this approach satisfies the current validated requirements, supports the accelerated retirement of legacy hardware, and reduces overall risk to the program.

E. Performance Metrics

TBMCS and C2AOS-C2IS are designed, developed, and delivered by the Air Force. This leverage greatly reduces the integration and testing costs associated with each capability module. The solutions will reside on CCE/CANES architecture. These software-only solutions eliminate hardware procurement, installation, and reduce sustainment costs.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*	Project (Number/Name) 3425 / *Digital Warfare Office (DWO) MBE&DT Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3425: *Digital Warfare Office (DWO) MBE&DT Development*	0.000	0.000	0.000	5.950	-	5.950	8.150	9.500	10.800	10.800	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Digital Warfare Office (DWO) was transferred from Proj 9123 to Proj 3425 in FY18 and out.

A. Mission Description and Budget Item Justification

The Chief of Naval Operations concurred with the Task Force Netted Navy recommendation to stand up the Digital Warfare Office (DWO) to set requirements, prioritize resources, and lead efforts on information interoperability and human/machine teaming.

NAVAIR, NAVSEA, SPAWAR, associated Program Executive Offices, warfare and system centers and University Affiliated Research Centers/Federally Funded Research and Development Centers will support the Model Based Engineering, Technical Design, and Requirements branches in the new DWO under OPNAV N2N6. In order to develop capability from the top down, the DWO will develop requirements for the system of systems to include all of the associated interoperability requirements. Due to the complexity of this work, the DWO will evolve the traditional requirements development methodology to a model based systems engineering environment that will include associated model extensions, reports, views, configuration management, help desk support, and documentation. This work will be completed by a series of teams, each focused on a separate threat domain, and made up of system modelers, fleet representatives, program of record representatives, architecture and interoperability experts, etc. The products generated by these teams will include data technical baselines for domain areas with individual profiles for each program of record, coordinated requirements recommendations, and potential areas for S&T and experimentation to fill gaps. The DWO will also explore emerging digital technologies including human/machine teaming.

Each SYSCOM will be involved in creating Data Technical Baseline (DTB) profiles specific for each program of record. DTBs may consist of interfaces, protocols, content, information quality, architectural aspects, and knowledge base frameworks. SYSCOMs will exercise technical authority to assess Program of Record compliance to DTBs and Key Performance Parameters in support of gate reviews and system engineering technical reviews.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Digital Warfare Office (DWO) Model Based Systems Engineering (MBSE)	0.000	0.000	5.950	0.000	5.950
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3425 / *Digital Warfare Office (DWO) MBE&DT Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
DWO was previously funded under PE 0604231N Proj 9123. ***FY 2018 Base Plans:*** -Perform MBE assessments on Programs of Record (PoRs) and develop models of the relevant Data Technical Baselines (DTBs). -Establish and implement required extensions to model requirements trace and reports that will be used in the Joint Capabilities Integration and Development System (JCIDS) process. -Validate current standards across the Systems Commands (SYSCOMs) to help form the overarching Navy DTB in order to facilitate tailoring of each standard for the PoR DTB. -Verify and validate different SYSCOM architectures and guidance to produce a Navy-wide high level architectural framework. -Develop functional baseline architecture of Navy capabilities that maps back to mission threads. -Configure the distributed MBE and data science environment for remote accessibility over a given network enclave, including but not limited to Non-Secure Internet Protocol Router (NIPR), Secure Internet Protocol Router (SIPR), and Joint Worldwide Intelligence Communications System (JWICS). -Integrate cyber requirements across all Digital Warfare Office (DWO) architecture and standard efforts and verify cyber requirements are captured as part of the modeling process. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	5.950	0.000	5.950

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

DWO is a non-acquisition effort that informs and matures Navy decisions, which in turn impacts acquisition programs.

E. Performance Metrics

DWO Performance Metrics: Goal: Assist Chief of Naval Operations (CNO) by setting requirements, prioritizing resources, and lead efforts on information interoperability and human/machine testing. Metric: Echelon 1 development of requirements associated with modeling, data science experimentation environment, and digital architectures.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 3425 / *Digital Warfare Office (DWO) MBE&DT Development*

The Digital Warfare Office will set requirements, prioritize resources, and lead efforts on information interoperability and human/machine teaming. This will result in a workforce that is trained in new systems engineering and modeling concepts and tools. It will also result in development of a requirements modeling environment to include associated model extensions, reports, views, and configuration management and in the development of digital technical baselines for programs to use to ensure cross-domain interoperability.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604231N / *Tactical Command System*				Project (Number/Name) 9123 / *FORCEnet*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
9123: *FORCEnet*	234.690	2.284	6.177	2.399	-	2.399	2.233	2.276	2.323	2.368	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

FY 2017 amended request includes $4.000 million to establish the approved Digital Warfare Office (DWO). Funding supports development of requirements modeling and data science experimentation environment, mission area Model-Based Engineering (MBE) teams, development of digital technical baselines, development of digital architectures, and the development of workforce training in Model-Based Systems Engineering (MBSE).

DWO transferred to Project 3425 in FY18 and out.

A. Mission Description and Budget Item Justification

FORCEnet is the Navy and Marine Corps initiative to deliver Information Warfare (IW) and achieve Department of the Navy (DoN)/Department of Defense (DoD) Transformation, Joint/Allied/Coalition Interoperability, implementing Maritime Domain Awareness (MDA), and Net-Centric Operations/Warfare (NCO/W). Chief of Naval Operations (CNO) IW effort focuses prioritization and organizational responsibility for IW, cyber, intelligence and sensors resulting in increased scope of systems, platforms and mission areas. FORCEnet is a foundation of Sea Power 21, Naval Power 21, which is the Naval Operating Concept (NOC) for Joint Operations, and the DoN's Naval Transformation Roadmap.

The FORCEnet project line funds the following efforts:

(1) IW Portfolio Health Assessment (PHA): Funding supports PHAs of Navy mission areas and identifies gaps in IW capabilities in the context of assessed mission areas. Funds support vignettes, technical baselines, architecture products, and briefings developed to support sponsor decision making processes.

(2) The Chief of Naval Operations concurred with the Task Force Netted Navy recommendation to stand up the Digital Warfare Office (DWO) to set requirements, prioritize resources, and lead efforts on information interoperability and human/machine teaming.

NAVAIR, NAVSEA, SPAWAR, associated Program Executive Offices, warfare and system centers and University Affiliated Research Centers/Federally Funded Research and Development Centers will support the Model Based Engineering, Technical Design, and Requirements branches in the new DWO under OPNAV N2N6. In order to develop capability from the top down, the DWO will develop requirements for the system of systems to include all of the associated interoperability requirements. Due to the complexity of this work, the DWO will evolve the traditional requirements development methodology to a model based systems engineering environment that will include associated model extensions, reports, views, configuration management, help desk support, and documentation. This work will be completed by a series of teams, each focused on a separate threat domain, and made up of system modelers, fleet representatives, program of record representatives, architecture and interoperability experts, etc. The products generated by these teams will include data technical baselines for domain areas with individual profiles for each program of record, coordinated requirements recommendations, and potential areas for S&T and experimentation to fill gaps. The DWO will also explore emerging digital technologies including human/machine teaming.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 9123 / *FORCEnet*

Each SYSCOM will be involved in creating Data Technical Baseline (DTB) profiles specific for each program of record. DTBs may consist of interfaces, protocols, content, information quality, architectural aspects, and knowledge base frameworks. SYSCOMs will exercise technical authority to assess Program of Record compliance to DTBs and Key Performance Parameters in support of gate reviews and system engineering technical reviews.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: FORCEnet	2.284	6.177	2.399	0.000	2.399
Articles:	-	-	-	-	-
FY 2016 Accomplishments: -Utilized and studied Navy mission areas in support of System of Systems (SoS) engineering assessments used to inform sponsor. These assessments identified integration and interoperability gaps, trades, and solutions for sponsor related equities. -Provided analytical support which ensured that cybersecurity risk assessments and engineering activities were informed by Navy Cybersecurity Situational Awareness (NCSA) capabilities as addressed by the PHA. Identified critical architectural dependencies that enabled mission situational awareness, which was a key component of the PHAs. -Continued to identify Navy mission area gaps in Information Warfare (IW) capabilities and also prioritized Science and Technology (S&T) efforts for future budget decisions. -Continued to assess tradespace and solutions, ensured Force level capability and systems of systems integration and interoperability in studied mission areas. -Continued to package assessments to support sponsor decision-making processes.					
FY 2017 Plans: -Continue to utilize and study Navy mission areas in support of System of Systems (SoS) engineering assessments used to inform sponsor. These assessments identify integration and interoperability gaps, trades, and solutions for sponsor related equities. -Continue to provide analytical support to ensure that cybersecurity risk assessments and engineering activities are informed by Navy Cybersecurity Situational Awareness (NCSA) capabilities as addressed by the Portfolio Health Assessment (PHA). Continue to identify critical architectural dependencies that enable mission situational awareness, which is a key component of the PHAs. -Continue to identify Navy mission area gaps in IW capabilities to prioritize S&T efforts for future budget decisions. -Continue to assess tradespace and solutions, ensuring Force level capability and SoS integration and interoperability in studied mission areas. -Continue to package assessments to support sponsor decision-making processes.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 9123 / *FORCEnet*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Additional FY 2017 funding supports the following: Digital Warfare Office (DWO): Perform Model-Based Engineering (MBE) assessments on Programs of Record (PoRs) and develop models of the relevant Data Technical Baselines (DTBs). -Establish and implement required extensions to model requirements trace and reports that will be used in the Joint Capabilities Integration and Development System (JCIDS) process. -Validate current standards across the System Commands (SYSCOMs) to help form the overarching Navy DTB in order to facilitate tailoring of each standard for the PoR DTB. -Verify and validate different SYSCOM architectures and guidance to produce a Navy-wide high level architectural framework. ***FY 2018 Base Plans:*** -Expand upon SoS mission engineering analyses and ongoing experimentation to iteratively mature the findings and outcomes, while increasing the support to a development of a Limited Operational Capability (LOC). -Continue to provide analytical support to ensure that cybersecurity risk assessments and engineering activities are informed by NCSA capabilities as addressed by the PHA. -Continue to utilize and study Navy mission areas in support of systems of systems engineering assessments used to inform sponsor. These assessments identify integration and interoperability gaps, trades, and solutions for sponsor related equities. -Continue to identify Navy mission area gaps in Information Warfare (IW) capabilities to prioritize Science and Technology (S&T) efforts for future budget decisions. Continue to identify critical architectural dependencies that enable mission situational awareness, which is a key component of the Portfolio Health Assessments (PHAs). -Continue to assess tradespace and solutions, ensuring Force level capability and System of Systems (SoS) integration and interoperability in studied mission areas. -Continue to package assessments to support sponsor decision-making processes. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	2.284	6.177	2.399	0.000	2.399

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604231N / *Tactical Command System*	**Project (Number/Name)** 9123 / *FORCEnet*

D. Acquisition Strategy

FORCEnet is a non-acquisition effort that informs and matures Navy decisions, which in turn impacts acquisition programs. Activities include acquiring intellectual capital in emerging technical areas through contracts providing technical engineering expertise and surge capacity for emerging tasks.

E. Performance Metrics

FORCEnet Performance Metrics: Goal: Chief of Naval Operations (CNO) strategic planning and supporting acquisition of classified efforts. Metric: Echelon 1 response to emergent strategic needs and classified warfighting capability.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604234N *I Advanced Hawkeye*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	4,387.199	211.146	363.792	292.535	-	292.535	218.671	186.251	169.629	173.004	0.000	6,002.227
3051: *E-2D Adv Hawkeye*	4,387.199	202.939	363.792	292.535	-	292.535	218.671	186.251	169.629	173.004	0.000	5,994.020
9999: *Congressional Adds*	0.000	8.207	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.207
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 364												

A. Mission Description and Budget Item Justification

The E-2D Advanced Hawkeye (AHE) program develops, demonstrates, tests, and procures the replacement of the AN/APS-145 radar system and other aircraft system components including Cooperative Engagement Capability Pre-Planned Product Improvement and Dual Transmit Satellite Communications that improve the E-2 weapon system to maintain open ocean mission capability while providing the United States Navy with an effective littoral surveillance, battle management, Naval Integrated Fire Control - Counter Air (NIFC-CA) and Theater Air and Missile Defense (TAMD) capability. Key radar technologies are Space-Time Adaptive Processing, Electronically Scanning Array, solid state transmitter, high dynamic range digital receivers and Identification Friend or Foe (IFF)/radar aperture integration. The resultant detection system provides a substantially improved overland performance by correcting current sensor shortfalls and enhancing all current required mission areas, while simultaneously contributing to the emerging TAMD mission requirements. Mode 5 is an upgrade to the existing IFF System providing the warfighter positive, secure and reliable identification of friendly aircraft, surface and sub-surface platforms. Mode 5 replaces the National Security Administration de-certified Mode 4 IFF capability, which is no longer effective or suitable for modern military operations. Mode 5 will support the Joint Initial Operational Capability (IOC) as defined by the Joint Requirements Oversight Council.

The Navy declared IOC for the E-2D in October 2014 with the first operational deployment in FY15. The System Development and Demonstration contract completed in FY15 as the program transitions into the production, deployment, and sustainment phase. Throughout the development of the E-2D, the threat has continued to evolve increasing in both capability and capacity. The E-2D Research, Development, Test and Evaluation budget after IOC reflects the Navy's further investment into the E-2D to ensure that carrier based command and control continues to pace the FY2020 and beyond threat in support of Navy and Joint operations around the world.

The program will be aligning the capability development in areas where there are interwoven technologies that leverage each other to provide the most efficient and cost effective means of delivering these capabilities to the warfighters. The program will deliver these capabilities to the Fleet users on approximately a 24 month release cycle as part of combined Delta System/Software Configuration (DSSC) builds. The baseline IOC configuration is named DSSC build 1 (DSSC-1). The DSSC build schedule is outlined along with the capabilities that are planned to comprise each DSSC build. If a capability is delayed or accelerated it will move between DSSC builds which will be reflected in updates to this budget.

DSSC-2 is planned for operational test and Fleet release in FY16. DSSC-2 incorporates several technologies developed under the System Development and Demonstration phase which include Dual Transmit Satellite Communications and an IFF technology refresh in preparation for Mode 5 and Mode S.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604234N *I Advanced Hawkeye*

DSSC-3 is planned for operational test and Fleet release in FY19. DSSC-3 is comprised of the following capabilities:
E-2D Accelerated Mid-Term Interoperability Improvement Program, NIFC-CA enhancements, Automatic Identification System, Embedded National Tactical Receiver, and Crypto Modernization/Frequency Remapping.

DSSC-3AR is planned for operational test and Fleet release in FY19. DSSC-3AR is comprised of all capabilities listed in DSSC-3 plus Aerial Refueling.

DSSC-4 is planned for operational test in FY21 and Fleet release in FY21. DSSC-4 provides critical capabilities needed to pace the 2020 threat and enabling components of NIFC-CA increment 3. DSSC-4 is comprised of the following capabilities: E-2D Multifunctional Information Distribution System/Joint Tactical Radio System, Tactical Targeting Networking Technology, Secret Internet Protocol Router Chat, Data Fusion, Fighter to Fighter Backlink, E-2D Navigation Warfare and E-2D Counter Electronic Attack.

DSSC-5 is planned for operational test in FY23 and Fleet release in FY23. DSSC-5 provides the capabilities necessary for E-2D to meet NIFC-CA increment 3 requirements and is comprised of the following: Sensor Netting, Stores Performance Assessment Requested Quality, and E-2D AN/ALQ-217 Electronic Support Measures.

This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	217.645	363.792	290.359	-	290.359
Current President's Budget	211.146	363.792	292.535	-	292.535
Total Adjustments	-6.499	0.000	2.176	-	2.176
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.010	0.000			
• SBIR/STTR Transfer	-6.489	0.000			
• Program Adjustments	0.000	0.000	1.400	-	1.400
• Rate/Misc Adjustments	0.000	0.000	0.776	-	0.776

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2016	FY 2017
Project: 9999: *Congressional Adds*		
Congressional Add: *Adv Radar Innovation Fund - Air (Cong)*	8.207	0.000

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604234N *I Advanced Hawkeye*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2016	FY 2017
Congressional Add Subtotals for Project: 9999	8.207	0.000
Congressional Add Totals for all Projects	8.207	0.000

Change Summary Explanation

Technical: N/A

Schedule:
Updated Advanced Hawkeye schedule for the Test and Evaluation section to show the Delta System/Software Configuration (DSSC) Build plan since the program will be aligning the capability development in areas where there are interwoven technologies that leverage each other to provide the most efficient and cost effective means of delivering these capabilities to the warfighter. The program will be delivering capabilities to the Fleet as part of combined DSSC builds.

Updated Aerial Refueling to move PRR to 4QFY17, to wait for aircraft installation to be completed.

Updated all FY17 New Starts program schedules to reflect 3Q FY17 start date.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy										Date: May 2017		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*				Project (Number/Name) 3051 / *E-2D Adv Hawkeye*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
3051: *E-2D Adv Hawkeye*	4,387.199	202.939	363.792	292.535	-	292.535	218.671	186.251	169.629	173.004	0.000	5,994.020
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 364

A. Mission Description and Budget Item Justification

The E-2D Advanced Hawkeye (AHE) program develops, demonstrates, tests, and procures the replacement of the AN/APS-145 radar system and other aircraft system components including Cooperative Engagement Capability Pre-Planned Product Improvement and Dual Transmit Satellite Communications that improve the E-2 weapon system to maintain open ocean mission capability while providing the United States Navy with an effective littoral surveillance, battle management, Naval Integrated Fire Control - Counter Air (NIFC-CA) and Theater Air and Missile Defense (TAMD) capability. Key radar technologies are Space-Time Adaptive Processing, Electronically Scanning Array, solid state transmitter, high dynamic range digital receivers and Identification Friend or Foe (IFF)/radar aperture integration. The resultant detection system provides a substantially improved overland performance by correcting current sensor shortfalls and enhancing all current required mission areas, while simultaneously contributing to the emerging TAMD mission requirements. Mode 5 is an upgrade to the existing IFF System providing the warfighter positive, secure and reliable identification of friendly aircraft, surface and sub-surface platforms. Mode 5 replaces the National Security Administration de-certified Mode 4 IFF capability, which is no longer effective or suitable for modern military operations. Mode 5 will support the Joint Initial Operational (IOC) as defined by the Joint Requirements Oversight Council.

The Navy declared IOC for the E-2D in October 2014 with the first operational deployment in FY15. The System Development and Demonstration contract completed in FY15 as the program transitions into the production, deployment, and sustainment phase. Throughout the development of the E-2D, the threat has continued to evolve increasing in both capability and capacity. The E-2D Research, Development, Test and Evaluation budget after IOC reflects the Navy's further investment into the E-2D to ensure that carrier based command and control continues to pace the 2020 and beyond threat in support of Navy and Joint operations around the world.

The program will be aligning the capability development in areas where there are interwoven technologies that leverage each other to provide the most efficient and cost effective means of delivering these capabilities to the warfighters. The program will deliver these capabilities to the Fleet users on an approximately 24 month release cycle as part of combined Delta System/Software Configuration (DSSC) builds. The baseline IOC configuration is named DSSC build 1 (DSSC-1). The DSSC build schedule is outlined below along with the capabilities that are planned to comprise each DSSC build. If a capability is delayed or accelerated it will move between DSSC builds which will be reflected in updates to this budget.

DSSC-2 is planned for operational test and Fleet release in FY16. DSSC-2 incorporates several technologies developed under the System Development and Demonstration phase which include Dual Transmit Satellite Communications and an IFF technology refresh in preparation for Mode 5 and Mode S.

DSSC-3 is planned for operational test and Fleet release in FY19. DSSC-3 is comprised of the following capabilities:

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

1. The E-2D Accelerated Mid-Term Interoperability Improvement Program (AMIIP) will address the most severe Cooperative Engagement Capability and data link related interoperability issues. This capability will significantly improve the quality of the tactical surveillance picture across all participants, reduce the possibility of track mis-identification and mitigate Blue on Blue engagements. AMIIP provides stable sensor fusion foundation to support sensor/weapon coordination requirements.

2. NIFC-CA enhancements will incorporate weapon system software improvements to implement capabilities and performance improvements needed to meet NIFC-CA increment 2 requirements. These capabilities come from software development in both the E-2D Classified and NIFC-CA Enhancement and Testing lines.

3. Crypto Modernization/Frequency Remapping: The E-2D Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS) with concurrent Multi-netting will be integrated into the E-2D. This effort includes replacing the Multifunctional Information Distribution System-Low Volume Terminal (MIDS LVT) radio with MIDS/JTRS that has incorporated Link-16 concurrent Multi-netting (CMN-4) and replacing the JTIDS High Power Amplifier Group with a Link-16 High Power Amplifier which will address Crypto Modernization and Frequency Remapping.

DSSC-3AR is planned for operational test and Fleet release in FY19. DSSC-3AR is comprised of all capabilities listed in DSSC-3 plus Aerial Refueling (AR).

1. An AR capability will allow the E-2D AHE to receive fuel from various organic and non-organic tanker aircraft. It provides Expanded Battle Space Surveillance and Targeting through significantly enhanced persistence and increased flexibility (range & endurance). AR will better enable the E-2D AHE to fully support current Carrier Strike Group /Joint 24/7 Theater Operations by providing more versatile stationing and/or forward basing options. Previous domestic E-2 concept demonstration effort successfully established the feasibility of tanking behind the F/A-18E/F and KC-130 aircraft under E-2 Squadrons, PE 0204152N.

DSSC-4 is planned for operational test in FY21 and Fleet release in FY21. DSSC-4 provides critical capabilities needed to pace the 2020 threat and enabling components of NIFC-CA increment 3. DSSC-4 is comprised of the following capabilities:

1. The E-2D Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS)Tactical Targeting Networking Technology (TTNT) integrates Advanced Tactical Data Link functionality into the E-2D. This effort includes replacing the MIDS LVT radio with MIDS/JTRS that has incorporated Link-16 Concurrent Multi-Netting and TTNT. MIDS/JTRS TTNT is a key enabler for E-2D sensor netting capability in support of the NIFC-CA mission.

2. The E-2D Secret Internet Protocol Router Chat capability will support integration of current collaboration tools including tactical "chat" (text) communications, real-time tasking, and Air Tasking Order distribution. Recent real world operations have demonstrated a migration of Command and Control communications from voice to Internet protocol based networks.

3. E-2D Data Fusion provides a fusion engine to blend off-board tactical data (e.g. Electronic Surveillance and Satellite Receiver System data) with already blended radar, Identify Friend or Foe and Cooperative Engagement Capability track-files, greatly enhancing situational awareness and tactical decision making. Successful E-2D NIFC-CA engagements depend on a clear/unambiguous tactical picture and the shortest possible decision timeline.

4. E-2D Fighter to Fighter backlink implements Link-16 Network Participation Group 20 messages for Fighter-to-Fighter backlink capability in E-2D. This functionality improves interoperability between E-2D and participating US Navy fighters, including 5th generation aircraft, enhancing combat effectiveness of E-2D, increases situational awareness and shortens kill-chain timelines (including NIFC-CA).

5. E-2D Navigation Warfare (NAVWAR) prevents loss of Global Positioning System (GPS) by using a Controlled Reception Pattern Antenna (CRPA) and antenna electronics (AE) unit which will function to provide GPS access in an Electronic Attack (EA) environment. NAVWAR significantly reduces the likelihood of loss of critical GPS Position, Navigation and Timing functionality that is fundamental to E-2D battlespace awareness and its contributions to multiple link networks.

6. The E-2D Counter Electronic Attack (CEA) capability will allow the E-2D radar system to maintain performance in an advanced hostile intentional electromagnetic interference environment. The E-2D CEA program will ensure E-2D effectiveness is maintained in an Electronic Attack environment supporting the NIFC-CA capability and overall Navy and Joint Integrated Air and Missile Defense strategy.

DSSC-5 is planned for operational test in FY23 and Fleet release in FY23. DSSC-5 provides the capabilities necessary for E-2D to meet NIFC-CA increment 3 requirements and is comprised of the following capabilities:

1. E-2D Sensor Netting provides fusion of data from off-board sources via a high bandwidth network that will allow E-2D to support the second spiral of performance improvement for NIFC-CA capability. Additional details are classified.

2. E-2D Stores Performance Assessment Requested Quality (SPARQ) establishes real-time requirements for E-2D sensor contribution to system of system NIFC-CA solutions. SPARQ expands and optimizes operational employment envelopes, improving Air Wing ability to take advantage of System of System capabilities of NIFC-CA, reducing kill chain timelines.

3. E-2D AN/ALQ-217 Electronic Support Measures (ESM) Combat Identification (CID) upgrades integrates digital receiver and processing technology, enables E-2 multi-ship geo-location and Time Difference Of Arrival with other sensors across L-16 and Tactical Targeting Networking Technology (TTNT), and provides a precision internal clock source to enable netted detection of advanced threat radar systems. Connectivity to Electronic Warfare (EW) netted sensors will provide multiple nodes, real time, enhanced CID capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Full Scale Fatigue Test	12.332	19.333	18.236	0.000	18.236
Articles:	-	-	-	-	-
Description: Full Scale Fatigue Test efforts for the E-2D Advanced Hawkeye Program. The USN requires that a fatigue test be conducted on the E-2D aircraft to determine the design service life of the airframe. Durability testing is being performed on a test article that is representative of production aircraft. The objective of the 20,000 equivalent flight hours fatigue test is to identify fatigue critical locations, substantiate the 10,000 flight					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
hours service life for the E-2D airframe fuselage and horizontal stabilizer, and demonstrate that the E-2D aircraft structure satisfies the program service life requirement. ***FY 2016 Accomplishments:*** Funds provided for continued support of Full Scale Fatigue Tests. The test program achieved approximately 8000 test hours. Inspections and analysis were performed at 500 effective flight hour intervals through approximately 7,500 effective flight hours. Effort began to configure and instrument replacement Outer Wing Panels. The current Outer Wing Panels are projected to reach the end of their service life. Repairs of the test article were conducted. ***FY 2017 Plans:*** Funds provided for continued support of Full Scale Fatigue Tests. The test program will continue towards the final goal of 20,000 test hours. Inspections and analysis will be performed at 500 effective flight hour intervals. Effort to configure and instrument replacement Outer Wing Panels will continue. Repairs of the test article will be conducted as required. ***FY 2018 Base Plans:*** Funds provided for continued support of Full Scale Fatigue Tests. The test program will continue towards the final goal of 20,000 test hours. Inspections and analysis will be performed at 500 effective flight hour intervals. Effort to configure and instrument replacement Outer Wing Panels will continue at the 10,000 hour interval. Repairs of the test article will be conducted as required. ***FY 2018 OCO Plans:*** N/A					
Title: Delta System/Software Configuration (DSSC) Integration and Test	11.172	13.411	15.266	0.000	15.266
Articles:	-	-	-	-	-
Description: Funds integration, engineering, risk reduction efforts, developmental and operational test of E-2D. ***FY 2016 Accomplishments:*** Funding provided for the continuation of DSSC 2 integration, developmental test and operational test. ***FY 2017 Plans:*** Funds provided for risk reduction integration and engineering test to support DSSC 3. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Funding provided for the continuation of DSSC 3 risk reduction integration and engineering test. ***FY 2018 OCO Plans:*** N/A					
Title: E-2D Classified Programs	6.898	19.833	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Provides support for the E-2D Advanced Hawkeye Classified Development efforts. Development and Integration of E-2D specific NIFC-CA Increment 2-3 improvements. ***FY 2016 Accomplishments:*** Funding provides for the continuation of E-2D Advanced Hawkeye (AHE) Classified Development efforts. ***FY 2017 Plans:*** Funds provided for the continuation of E-2D AHE Classified Development efforts. Conduct test and evaluation and integrate capability into DSSC-3 baseline. FY17 increase is due to significant test requirements to validate capability. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Mode 5/S	3.058	0.225	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Mode 5/S is the replacement/upgrade to the existing Identification Friend or Foe Interrogator system. ***FY 2016 Accomplishments:*** Continue APX-122A system test and evaluation. ***FY 2017 Plans:*** Funds provided for resumption of Mode 5/S flight test to identify software deficiencies and Weapon System Specification compliance. Continue APX-122A system test and evaluation. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 OCO Plans:*** N/A					
Title: Aerial Refueling	69.692	81.486	64.326	0.000	64.326
Articles:	-	-	-	-	-
Description: Funds the system development and testing to support the incorporation of Aerial Refueling (AR) capability into the E-2D AHE aircraft. Emphasis during system development is on system redesign, air vehicle design, human systems integration and design, including interior/lighting modifications and seat replacement. Flight testing is required to evaluate fuel systems changes, aerial refueling capability, field of view, thermal and aerodynamic loads, kinematic performance, and handling qualities. Planned for DSSC-3AR ***FY 2016 Accomplishments:*** Funding provided for continued E&MD of AR, continued Systems Integration Laboratory testing, Probe Static Test and instrumentation and installation of an aerial refueling capability on the first developmental test aircraft and the start of the second developmental test aircraft. Additionally, funding provided for flight test planning activities. ***FY 2017 Plans:*** Funding provided for completion of the instrumentation and installation of an aerial refueling capability on the second developmental test aircraft and the installation of an aerial refueling capability on the first production representative operational test aircraft. Funding provided for production readiness review and developmental flight test to include hardware functionality handling qualities evaluation and envelope expansion with four threshold tankers (F/A-18,KC-130,KC-10 and KC135). ***FY 2018 Base Plans:*** Funding provided for developmental flight test to include hardware functionality, handling qualities evaluation and envelope expansion with five threshold tankers (F/A-18,KC-130,KC-10,KC-135 and OMEGA). Additionally, funding provided for physical configuration audit (PCA). ***FY 2018 OCO Plans:*** N/A					
Title: E-2D Counter Electronic Attack	19.969	28.512	22.214	0.000	22.214
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Funds the mission system development and testing of the capability to counter advanced radar electronic attack threats. The E&MD effort will focus on integration of capabilities in the radar and mission computer display systems that include system integration, and laboratory and flight test validation. Planned for DSSC-4. ***FY 2016 Accomplishments:*** Funds provided for the continuation of the software development of the radar and mission computer systems that will provide the capabilities to counter advanced radar electronic attack threats. Funding provided for System Requirements Review (SRR). ***FY 2017 Plans:*** Funds provided for the continuation of software development, mission computer and radar system development to provide the Counter Electronic Attack (CEA) solution. Program will conduct Preliminary Design Review and Critical Design Review. ***FY 2018 Base Plans:*** Funds provided for the continuation of software development, mission computer and radar system development to provide the Counter Electronic Attack (CEA) solution. Program will conduct Test Readiness Review, Functional Readiness Review and begin developmental test. ***FY 2018 OCO Plans:*** N/A					
Title: Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/JTRS)Tactical Targeting Networking Technology (TTNT) ***Articles:*** ***Description:*** MIDS/JTRS TTNT provides Advanced Tactical Data Link functionality into the E-2D. This effort includes replacing the Multifunctional Information Distribution System - Low Volume Terminal (MIDS LVT) radio with MIDS/JTRS that has incorporated Link-16 concurrent Multi-netting (CMN-4) and TTNT. MIDS/JTRS TTNT is a key enabler for E-2D sensor netting capability in support of the Naval Integrated Fire Control-Counter Air mission. Planned for DSSC-4. ***FY 2016 Accomplishments:***	30.630 -	41.734 -	11.539 -	0.000 -	11.539 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Funding provides for continued Design, Development, hardware, software, System Readiness Review and Preliminary Design Review for phase I associated with MIDS/JTRS/CMN-4 integration. ***FY 2017 Plans:*** Funds provided for continued Design and Development. Conduct Preliminary Design Review for Phase II aircraft integration. ***FY 2018 Base Plans:*** Funds provided for continuation of phase II aircraft integration development. Conduct Critical Design Review. Start lab testing for preparation for Test Readiness Review. ***FY 2018 OCO Plans:*** N/A					
Title: SIPR Chat	16.595	15.000	5.500	0.000	5.500
Articles:	-	-	-	-	-
Description: The E-2D Secret Internet Protocol Router (SIPR) Chat capability will support integration of current collaboration tools including tactical "chat" (text) communications, real-time tasking, and Air Tasking Order distribution. Recent real world operations have demonstrated a migration of Command and Control communications from voice to Internet protocol based networks. Planned for DSSC-4. ***FY 2016 Accomplishments:*** Funds provided for continued System Development & Design, Software and Router Aircraft Integration to support and enable SIPRChat capability. ***FY 2017 Plans:*** Funds provided for continued System Development & Design, Software and Router Aircraft Integration, Preliminary Design Review and Critical Design Review to support and enable SIPRChat capability. ***FY 2018 Base Plans:*** Funds provided for Test Readiness Review, Functional Readiness Review and Developmental Test to support and enable SIRPCaht capability. ***FY 2018 OCO Plans:*** N/A					
Title: Naval Integrated Fire Control - Counter Air Testing (NIFC-CA)	19.823	37.588	38.296	0.000	38.296
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: NIFC-CA requires System of Systems level testing. CNO-mandate to address Naval weapon systems' Command, Control, Communications, Computer, Intelligence, Surveillance and Reconnaissance gaps. Planned for DSSC-3. ***FY 2016 Accomplishments:*** Funds provided for continued software development support and developmental flight tests. NIFC-CA includes increased flights for E-2D participation NIFC-CA increment 1 developmental and operational systems of systems testing. ***FY 2017 Plans:*** Funds provided for continued NIFC-CA program support and flight testing. NIFC-CA requires increased E-2D participation in NIFC-CA increment 1-3 developmental and operational systems of systems ground, simulation, and flight testing. Funds trainer and training development so the fleet can fully train to NIFC-CA capabilities. ***FY 2018 Base Plans:*** Funds provided for continued NIFC-CA flight test. Additionally, continues E-2D participation in NIFC-CA increment 1-3 developmental and operational systems of systems ground, simulation, and flight testing. Continues fleet training development for NIFCCA capabilities. ***FY 2018 OCO Plans:*** N/A					
Title: Accelerated Mid-Term Interoperability Improvement Program (AMIIP) ***Articles:*** ***Description:*** Address the most severe data link related interoperability issues. This capability will significantly improve the quality of the tactical surveillance picture, reduce the possibility of leakers, mitigate Blue on Blue engagements and mid-identification of tracks. Provides stable sensor fusion foundation to support sensor/ weapon coordination requirements. Planned for DSSC-3. ***FY 2016 Accomplishments:*** Funds provided for continued systems engineering, systems development support and software integration. Preliminary Design Review, Critical Design Review and Test Readiness Review. ***FY 2017 Plans:***	12.770 -	11.988 -	3.779 -	0.000 -	3.779 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Funds provided for finishing integration of software into DSSC-3 build. Fleet Readiness Review. Completing developmental flight test of software changes. ***FY 2018 Base Plans:*** Funds provided to complete software integration development. ***FY 2018 OCO Plans:*** N/A					
Title: Sensor Netting ***Articles:*** ***Description:*** Provides fusion of data from off-board sources via a high bandwidth network that will allow E-2D to support second spiral of performance improvements for Naval Integrated Fire Control-Counter Air Testing (NIFC-CA) capabilities. Additional details are classified. Planned for DSSC-5. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Funds provided for development of System Requirements at the Weapon System Specification level. The program will begin the System Engineering Technical Review (SETR) process with the vendor. ***FY 2018 Base Plans:*** Funds provided for continuation of system requirements development. Start of software development & integration of the mission computer and associated systems to provide the Sensor Netting solution. Program will conduct System Requirements Review(SRR) and Integrated Baseline Review(IBR). ***FY 2018 OCO Plans:*** N/A	0.000 -	11.349 -	17.380 -	0.000 -	17.380 -
Title: Data Fusion ***Articles:*** ***Description:*** E-2D Data Fusion provides a fusion engine to blend off-board tactical data (e.g. Electronic Surveillance and Satellite Receiver System (SRS) data) with already blended radar, Identify Friend or Foe (IFF) and Cooperative Engagement Capability (CEC) track-files, greatly enhancing Situational Awareness and tactical decision making. Successful E-2D NIFC-CA engagements depend on a clear/unambiguous tactical picture and the shortest possible decision timeline. Planned for DSSC-4.	0.000 -	15.847 -	18.617 -	0.000 -	18.617 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: N/A ***FY 2017 Plans:*** Funds provided for requirements assessment of E-2D Data Fusion program, and to conduct trade studies for the system integration development. ***FY 2018 Base Plans:*** Funds provided to continue trade studies for the requirement development/system integration development. Begin Systems Engineering and Integration. Program will conduct system requirements review, preliminary design review and critical design review. ***FY 2018 OCO Plans:*** N/A					
Title: Fighter to Fighter Backlink ***Articles:*** ***Description:*** Fighter to Fighter backlink implements Link-16 Network Participation Group 20 messages for Fighter-to-Fighter backlink capability in E-2D. This functionality improves interoperability between E-2D and participating US Navy fighters, including 5th generation aircraft, enhancing combat effectiveness of E-2D, increases Situational Awareness (SA), and shortens kill-chain timelines (including NIFC-CA). ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Funds provided for requirements assessment of the E-2D Fighter to Fighter backlink program, and to conduct trade studies for the system integration development. ***FY 2018 Base Plans:*** Funds provided to continue trade studies for the requirement development/system integration development. Begin Systems Engineering and Integration. Program will conduct system requirements review, preliminary design review and critical design review. ***FY 2018 OCO Plans:*** N/A	0.000 -	9.777 -	11.789 -	0.000 -	11.789 -
Title: Navigation Warfare (NAVWAR)	0.000	6.883	10.272	0.000	10.272

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
Description: E-2D Navigation Warfare (NAVWAR) prevents loss of Global Positioning System (GPS)by using a Controlled Reception Pattern Antenna (CRPA) and Antenna Electronics (AE) unit which will function to provide GPS access in an Electronic Attack (EA) environment. NAVWAR significantly reduces the likelihood of loss of critical GPS Position, Navigation and Timing functionality that is fundamental to E-2D battlespace awareness and its contributions to multiple link networks. Without NAVWAR capability, the E-2D AHE will be unable to provides its services in GPS contested airspace, putting Navy units at unacceptable risk and hindering Joint operational flexibility. NAVWAR capability will allow the E-2D AHE to operate in areas where signal disruption and jamming would prohibit unprotected GPS reception. With this new capability, the E-2D AHE will be able to provide continuous operations in a degraded GPS environment for mission areas that depend on GPS for precise position, navigation, and timing. Planned for DSSC-4. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Funds provided for system engineering and integration development and Government Furnished Hardware contract award. ***FY 2018 Base Plans:*** Funds provided to continue system engineering and integration development. Program will conduct system requirements review/system functional review (SRR/SFR), preliminary design review and critical design review. Begin hardware & software development. ***FY 2018 OCO Plans:*** N/A					
Title: Stores Performance Assessment Requested Quality (SPARQ)	0.000	7.595	9.799	0.000	9.799
Articles:	-	-	-	-	-
Description: E-2D Stores Performance Assessment Requested Quality (SPARQ) establishes real-time requirements for E-2D sensor contribution to system of system Naval Integrated Fire Control-Counter Air (NIFC-CA) solutions. SPARQ expands and optimizes operational employment envelopes, improving Air Wing ability to take advantage of System of System capabilities of NIFC-CA, reduces operational workload and latency of execution. Planned for DSSC-5. ***FY 2016 Accomplishments:***					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** Funds provided for development of System Requirements at the Weapon System Specification level. The program will begin the System Engineering Technical Review (SETR) process with the vendor. ***FY 2018 Base Plans:*** Funds provided for continuation of system requirements development. Start of software development of the mission computer and associated systems to provide the SPARQ solution. Program will conduct System Requirements Review (SRR) and Integrated Baseline Review(IBR). ***FY 2018 OCO Plans:*** N/A					
Title: ALQ-217 Electronic Support Measures Upgrade ***Articles:*** ***Description:*** ALQ-217 digital upgrade greatly enhances Combat Identification (CID), battle space awareness, and effectiveness of blue forces. Combat Identification (#3) requirements and networked sensor systems are specifically called out on COMACCLOGWING's FY15 E-2D Naval Aviation Readiness Group (NARG). Planned for DSSC-5. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Funds provided for development of System Requirements at the Weapon System Specification level. The program will begin the System Engineering Technical Review (SETR) process with the vendor. System Requirements Review and System Functional Review. Stand up Software Support Activity capability to develop and integrate the ESM software into the Mission Computer. Also procures two RDT&E ALQ-217 development and test assets. ***FY 2018 Base Plans:*** Funds provided for the continuation of system requirement development. Start hardware and software development & integration, providing increase Electronic Support Measures (ESM)capability against advanced enemy threats. Program will conduct System Requirements Review & System Functional Review. Conduct Preliminary Design Review. ***FY 2018 OCO Plans:***	0.000 -	27.799 -	28.956 -	0.000 -	28.956 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: Crypto Modernization/Frequency Remapping	0.000	15.432	16.566	0.000	16.566
Articles:	-	-	-	-	-
Description: The E-2D Multifunctional Information Distribution System/Joint Tactical Radio System (MIDS/ JTRS) with concurrent Multi-netting will be integrated into the E-2D. This effort includes replacing the Multifunctional Information Distribution System-Low Volume Terminal (MIDS LVT) radio with MIDS/JTRS that has incorporated Link-16 concurrent Multi-netting (CMN-4) and replacing the JTIDS High Power Amplifier Group with a Link-16 High Power Amplifier which will address Crypto Modernization and Frequency Remapping. Planned for DSSC-4. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Funds are provided to begin System Engineering Technical Review process which will facilitate requirements updates, required changes to technical drawings and other relevant documentation in order to develop an Engineering Change Proposal that incorporates MIDS JTRS CMN-4. System Requirements Review and Preliminary Design Review. ***FY 2018 Base Plans:*** Funds are provided to continue hardware & software development & integration. Conduct Critical Design Review and Test Readiness Review. Begin lab testing. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	202.939	363.792	292.535	0.000	292.535

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0195: *E-2D AHE*	1,020.945	1,154.569	1,004.913	-	1,004.913	937.784	974.465	977.756	1,154.033	2,200.793	19,330.161
• APN/0605: *Initial Spares - E-2*	1,478.401	1,710.767	1,717.940	18.850	1,736.790	1,359.495	1,379.020	1,400.602	1,084.857	Continuing	Continuing
• APN/0544: *E-2 Series*	19.046	32.949	97.563	-	97.563	85.186	118.308	212.685	240.185	454.133	2,709.662

Remarks

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D. Acquisition Strategy

Milestone C Acquisition Strategy was approved by Milestone Decision Authority, Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L))on 29 Dec 2008. Milestone C approval to proceed into Production and Deployment was given 11 June 2009 by USD (AT&L). Certification for entrance into Initial Operational Test & Evaluation was received on 06 Feb 2012. Full Rate Production Acquisition Strategy approved on 20 August 2012. Initial Operational Test & Evaluation concluded 1 October 2012. Successfully held a Defense Acquisition Board for Full Rate Production. Received a successful decision to enter into Full Rate Production on 01 March 2013. Initial Operational Capability achieved on 10 October 2014.

E. Performance Metrics

Successfully met the Delta System/Software Configuration (DSSC) milestones.

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware-Fatigue	C/CPFF	Northrop Grumman Corporation (NGC) : Melbourne, FL	7.543	10.933	Dec 2015	19.019	Dec 2016	17.436	Dec 2017	-		17.436	31.942	86.873	86.873
Primary Hardware Dev-AMIIP/SIPRChat & TTNT	C/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	30.200	30.430	Mar 2016	36.364	Dec 2016	10.525	Dec 2017	-		10.525	18.353	125.872	125.872
Primary Hardware Dev-TTNT	SS/FFP	Data Link Solutions : Cedar Rapids, IA	10.456	2.900	May 2016	4.568	Apr 2017	1.365	Dec 2017	-		1.365	0.000	19.289	19.289
Primary Hardware Dev - TTNT	SS/CPFF	ViaSat : Carlsbad, CA	0.000	1.100	May 2016	1.000	Apr 2017	0.000		-		0.000	0.000	2.100	2.100
Primary Hardware-Aerial Refueling	SS/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	133.387	64.178	Oct 2015	56.464	Oct 2016	31.797	Oct 2017	-		31.797	12.662	298.488	298.488
Primary Hardware Dev-NAVWAR	SS/CPFF	Northrop Grumman Corporation (NGC) : Melbourne, FL	0.000	0.000		2.380	May 2017	7.807	Dec 2017	-		7.807	9.054	19.241	19.241
Primary Hardware Dev - TTNT	SS/CPFF	NorthStar Scientific Corp. : Kapole, HI	0.000	4.914	Jun 2016	0.000		0.000		-		0.000	0.000	4.914	4.914
Primary Hardware Dev - CMFR	C/CPFF	Northrop Grumman Corporation : Melbourne, FL	0.000	0.000		5.000	May 2017	5.000	Dec 2017	-		5.000	0.000	10.000	10.000
Primary Hardware Dev - ESM	C/CPFF	Lockheed Martin : New York, NY	0.000	0.000		15.004	May 2017	6.079	Jan 2018	-		6.079	100.389	121.472	121.472
Training Development	SS/FFP	Rockwell Collins : Cedar Rapids, IA	1.580	1.167	May 2016	16.600	Feb 2017	18.383	Dec 2017	-		18.383	23.675	61.405	61.405
Primary Software Development	Various	Navy Syst Mgt Activity : Arlington, VA	0.000	29.477	Apr 2016	34.796	Dec 2016	14.111	Dec 2017	-		14.111	12.061	90.445	90.445
Primary Software Development	Various	Various : Various	0.000	1.961	May 2016	1.961	Feb 2017	0.000		-		0.000	0.000	3.922	3.922
Primary Software Development - ESM	C/CPFF	Lockheed Martin : New York, NY	0.000	0.000		8.129	Jul 2017	5.836	Jan 2018	-		5.836	88.113	102.078	102.078
System Engineering	Various	Various : Various	0.000	0.913	May 2016	0.225	Dec 2016	0.000		-		0.000	0.000	1.138	1.138

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Prod Dev costs no longer funded in FYDP	Various	Various : Various	3,598.030	0.000		0.000		0.000		-		0.000	0.000	3,598.030	-
		Subtotal	3,781.196	147.973		201.510		118.339		-		118.339	296.249	4,545.267	-

Remarks

Totals may not add due to rounding.
Primary HW NAVWAR increase from FY17 to FY18 is for continued systems & integration development. Also to begin the hardware development, conduct SRR/SFR, PDR & CDR.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	Various	Navy Syst Mgt Activity : Arlington, VA	22.608	0.312	Apr 2016	10.714	Dec 2016	10.097	Dec 2017	-		10.097	46.254	89.985	-
Software Development-SN	Various	Navy Syst Mgt Activity : Arlington, VA	0.000	0.000		8.035	May 2017	14.784	Dec 2017	-		14.784	43.970	66.789	-
Software Development-Data Fusion	Various	Navy Syst Mgt Activity : Arlington, VA	0.000	0.000		13.449	May 2017	14.821	Dec 2017	-		14.821	39.376	67.646	-
Software Development-CEA	Various	Navy Syst Mgt Activity : Arlington, VA	1.370	0.000		2.630	Dec 2016	1.822	Dec 2017	-		1.822	1.843	7.665	-
Software Development-SIPRChat	WR	SPAWAR : San Diego	4.478	4.081	Dec 2015	3.902	Dec 2016	0.000		-		0.000	0.000	12.461	12.461
Software Development-TTNT	SS/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	0.200	0.000		6.667	Dec 2016	1.583	Dec 2017	-		1.583	0.000	8.450	8.450
Software Development-F2F	SS/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	0.000	0.000		7.191	May 2017	9.712	Dec 2017	-		9.712	17.200	34.103	34.103

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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development-NAVWAR	SS/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	0.000	0.000		2.900	May 2017	0.931	Dec 2017	-		0.931	1.950	5.781	5.781
Software Development - SPARQ	SS/CPIF	Northrop Grumman Corporation (NGC) : Melbourne, FL	0.000	0.000		6.543	May 2017	8.774	Dec 2017	-		8.774	18.745	34.062	34.062
Software Development - ESM	SS/CPIF	Northrop Grumman Corporation : Melbourne, FL	0.000	0.000		2.582	May 2017	2.215	Dec 2017	-		2.215	26.583	31.380	31.380
Software Development - CMFR	SS/CPIF	Northrop Grumman Corporation : Melbourne, FL	0.000	0.000		9.280	May 2017	9.416	Dec 2017	-		9.416	24.654	43.350	43.350
Government Engineering Support	WR	Naval Air Warfare Center Aircraft Division (NAWCAD : Pax River, MD	96.754	13.902	Nov 2015	20.698	Nov 2016	18.619	Nov 2017	-		18.619	56.441	206.414	-
Government Engineering Support	WR	Naval Air Warfare Center Training Systems Division : Orlando, FL	11.546	0.722	Dec 2015	0.528	Nov 2016	0.472	Nov 2017	-		0.472	0.000	13.268	-
Government Engineering Support	Various	Various : Various	15.126	1.015	Nov 2015	0.581	Nov 2016	0.497	Nov 2017	-		0.497	0.749	17.968	-
Integrated Logistics Support	Various	Various : Various	9.667	0.179	Nov 2015	4.176	Nov 2016	4.089	Nov 2017	-		4.089	26.709	44.820	-
Contractor Engineering Support ETS	C/CPFF	Imagine One : Colonial Beach, VA	5.149	2.510	Jan 2016	0.000		0.000		-		0.000	0.000	7.659	7.659
Contractor Engineering Support ETS	C/CPFF	Precise : Lexington Park, MD	0.000	0.000		1.841	Jan 2017	1.257	Jan 2018	-		1.257	3.399	6.497	6.497
Technical Data	Various	Various : Various	1.544	0.000		0.310	Dec 2016	0.000		-		0.000	0.000	1.854	-
Prior Year Support costs no longer funded in FYDP	Various	Various : Various	100.725	0.000		0.000		0.000		-		0.000	0.000	100.725	-
		Subtotal	269.167	22.721		102.027		99.089		-		99.089	307.873	800.877	-

Remarks

Totals may not add due to rounding.

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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistic Support, Government Engineering Support, Contractor Engineering Support, and Technical Data - various contractors and award dates throughout the fiscal year. Software Dev SN & SPARQ - Increase in FY17 to FY18 to continue requirements development. Also, conduct a System Requirements Review (SRR) and Integrated Baseline Review (IBR), & start software development and complex integration of multiple weapon & communication (internal & external) systems.															

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental T&E	WR	NAWCAD : Pax River, MD	115.031	24.553	Nov 2015	49.254	Nov 2016	50.377	Nov 2017	-		50.377	666.965	906.180	-
Developmental T&E	Various	Various : Various	35.703	0.577	Jul 2016	0.100	Oct 2016	0.100	Oct 2017	-		0.100	0.800	37.280	-
Developmental T&E-ROR	SS/CPFF	Northrop Grumman Corporation (NGC) : Melbourne, FL	2.000	1.000	Dec 2016	4.840	May 2017	5.980	Nov 2017	-		5.980	29.272	43.092	43.092
Developmental T&E ETS	Various	Various : Various	12.402	0.152	Dec 2015	0.000		0.000		-		0.000	0.000	12.554	12.554
Developmental T&E ETS	C/CPFF	JF Taylor Inc : Lexington Park, MD	8.244	1.564	Feb 2016	1.361	Feb 2017	1.703	Feb 2018	-		1.703	17.944	30.816	30.816
Operational T&E	WR	NAWCAD : Pax River, MD	23.849	0.000		1.326	Nov 2016	2.801	Nov 2017	-		2.801	3.152	31.128	-
Operational T&E	Various	Various : Various	5.032	2.743	Apr 2016	1.595	Nov 2016	1.013	Nov 2017	-		1.013	91.726	102.109	-
Test Assets	Various	Various : Various	3.900	1.292	Apr 2016	1.409	Nov 2016	12.783	Nov 2017	-		12.783	9.682	29.066	-
Prior Year T&E costs no longer funded in FYDP	Various	Various : Various	61.440	0.000		0.000		0.000		-		0.000	0.000	61.440	-
		Subtotal	267.601	31.881		59.885		74.757		-		74.757	819.541	1,253.665	-

Remarks

Totals may not add due to rounding.
Developmental Test & Evaluation (T&E), Developmental T&E (Engineering & Technical Services) and Operational T&E - various contractors and award dates throughout the fiscal year.
The test asset increase from FY17 to FY18 is for the pre-production test articles needed to support SIL testing and I-file development for the ESM. There is 0 9-12 month lead time.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*	Project (Number/Name) 3051 / *E-2D Adv Hawkeye*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Various	Various : Various	2.621	0.270	Oct 2015	0.370	Oct 2016	0.350	Oct 2017	-		0.350	2.237	5.848	-
Program Mgmt Supt	Various	Various : Various	0.000	0.094	Dec 2015	0.000		0.000		-		0.000	0.000	0.094	-
Prior Year Mgmt costs no longer funded in FYDP	Various	Various : Various	66.614	0.000		0.000		0.000		-		0.000	0.000	66.614	-
		Subtotal	69.235	0.364		0.370		0.350		-		0.350	2.237	72.556	-

Remarks

Totals may not add due to rounding.

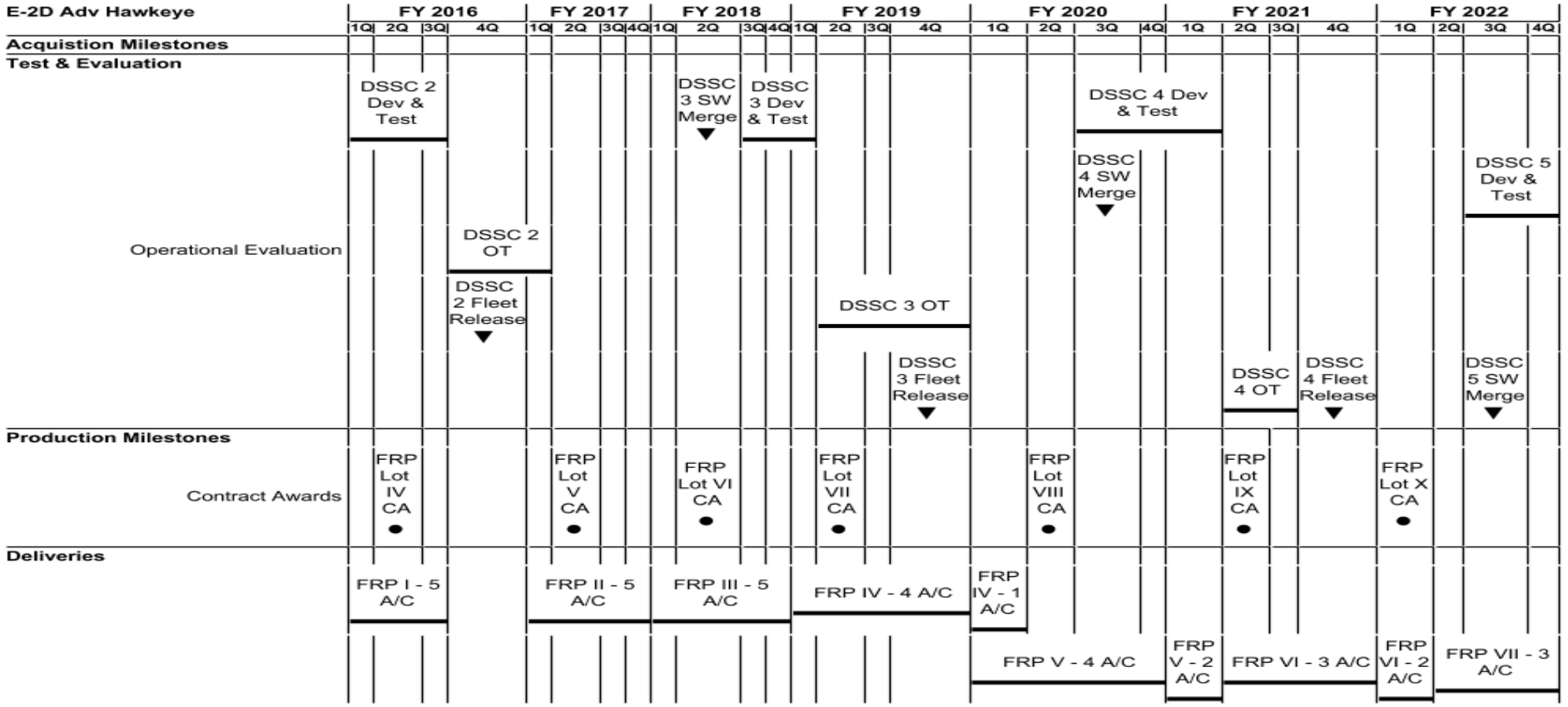
Contractor Engineering Support, Government Engineering Support, Program Support and Travel - various contractors and/or award dates throughout the fiscal year.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	4,387.199	202.939		363.792		292.535		-		292.535	1,425.900	6,672.365	-

Remarks

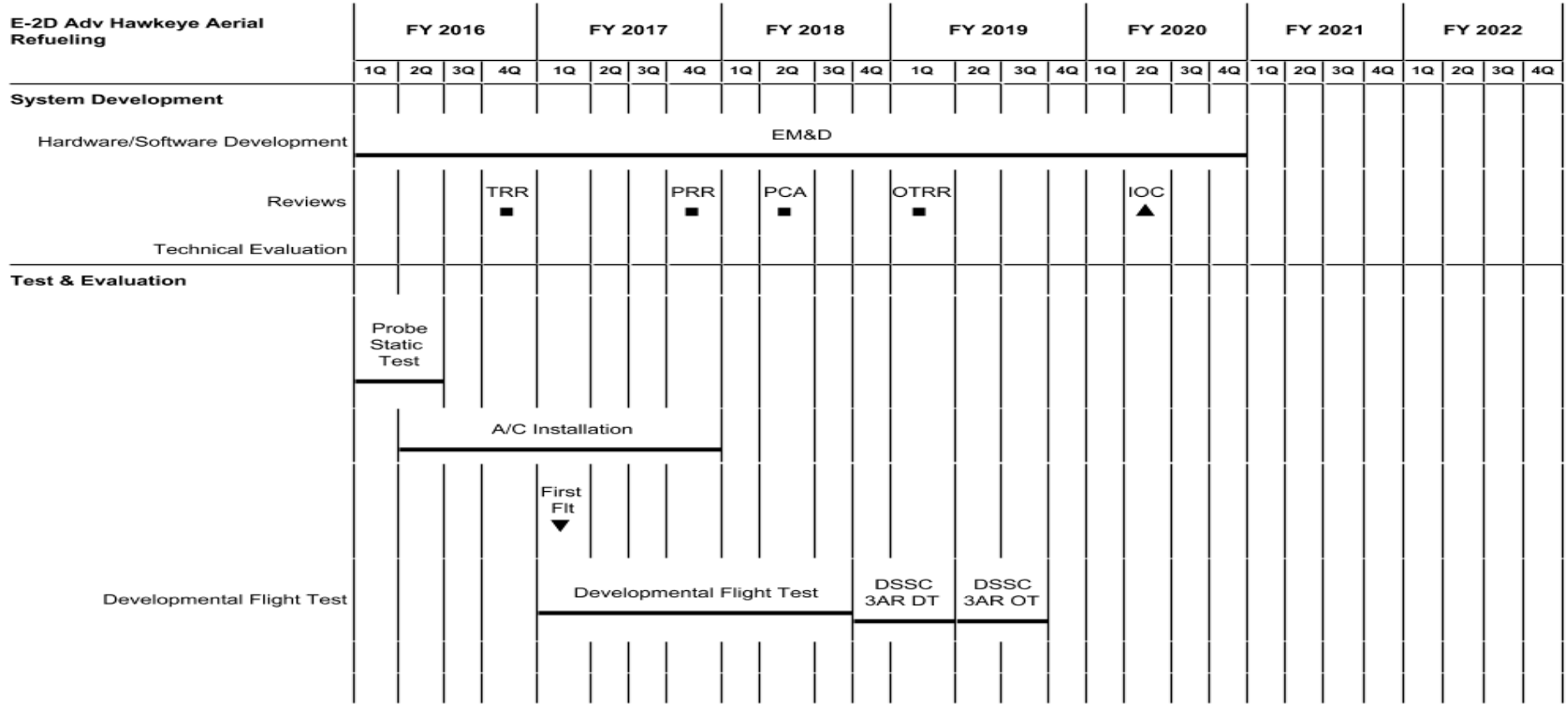
Totals may not add due to rounding.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



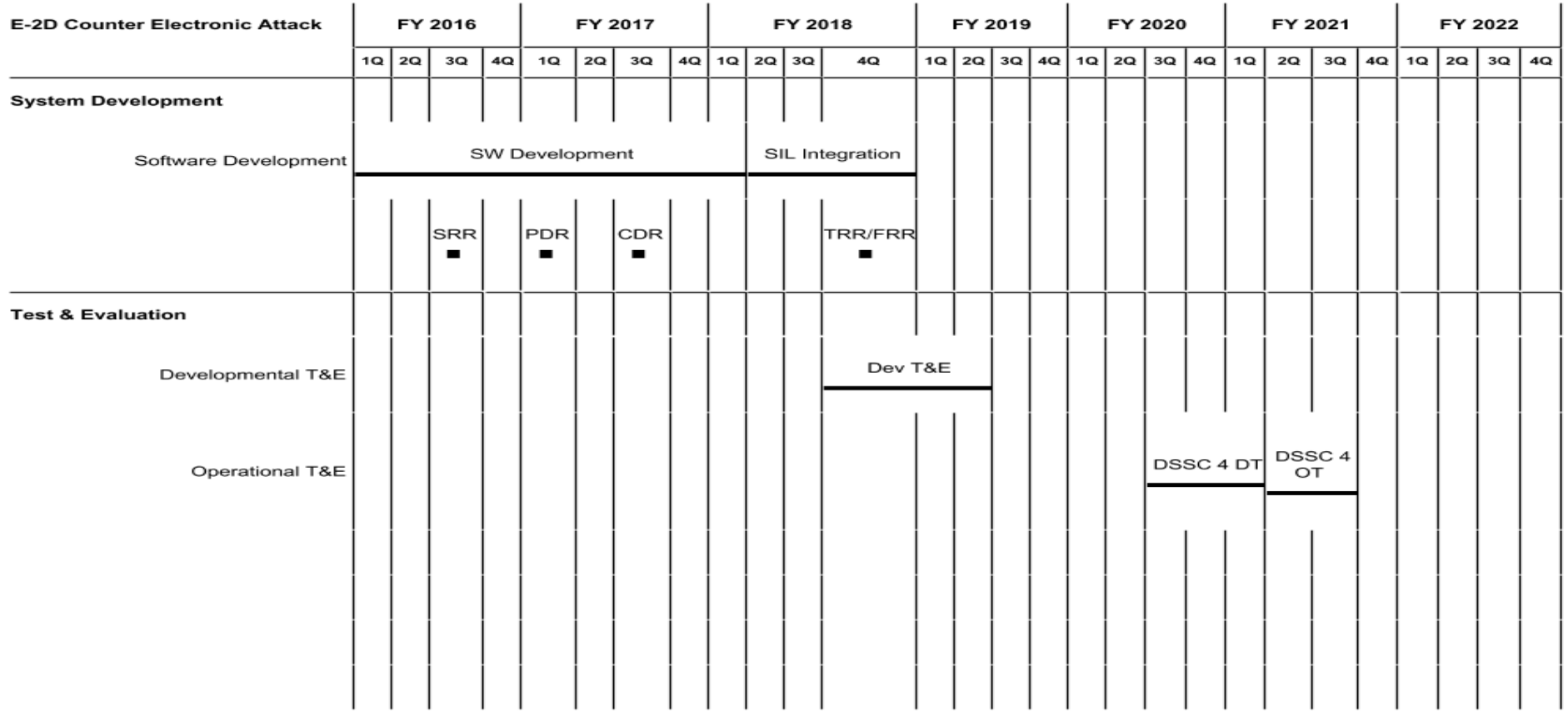
2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



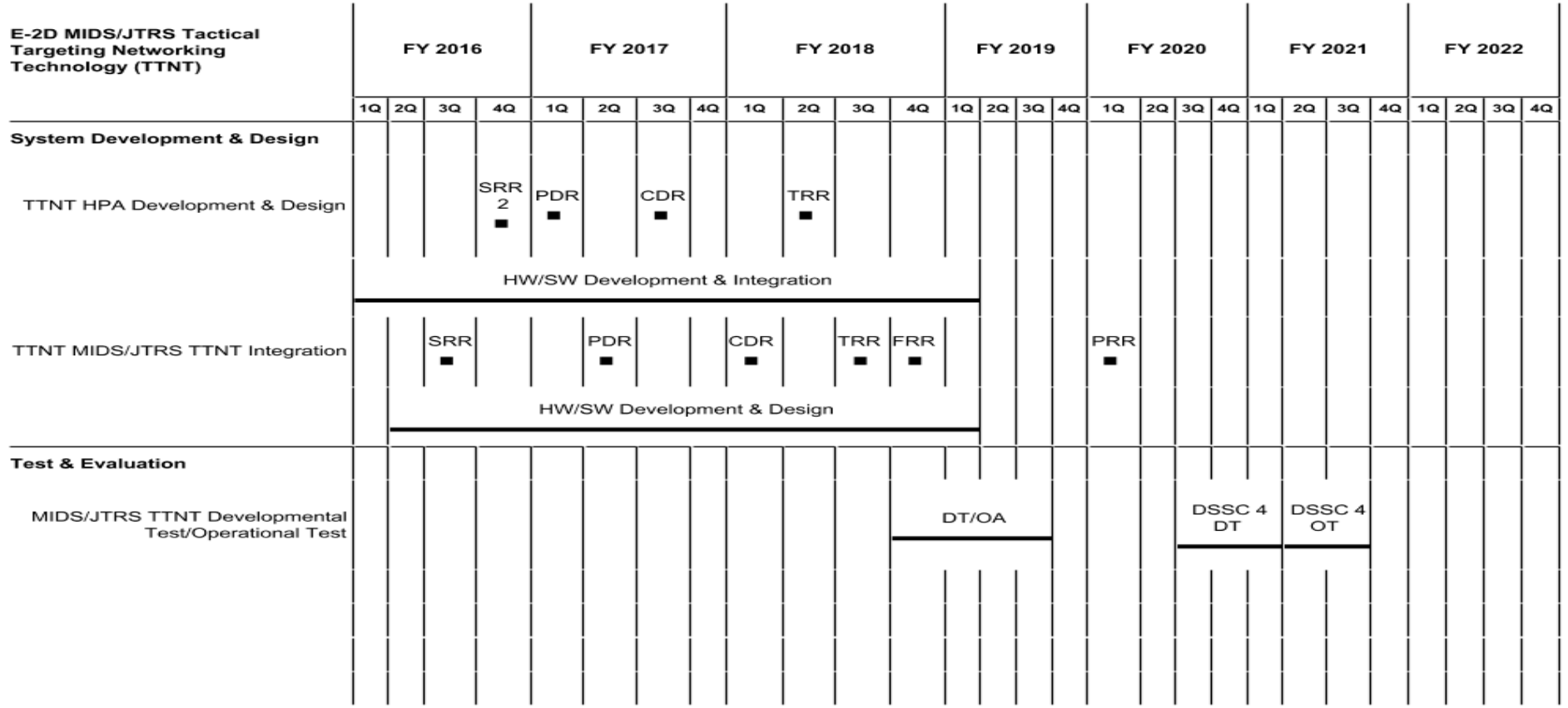
2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



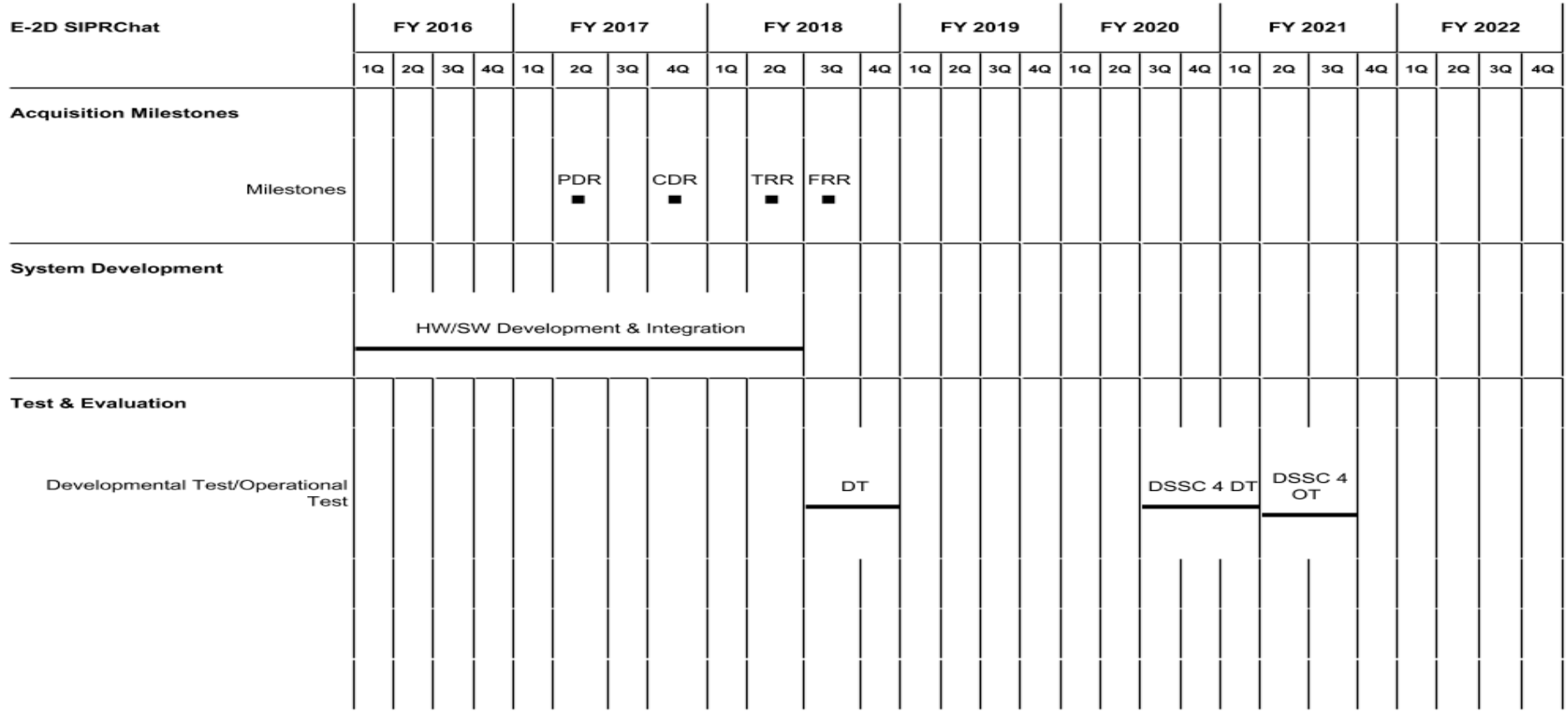
2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



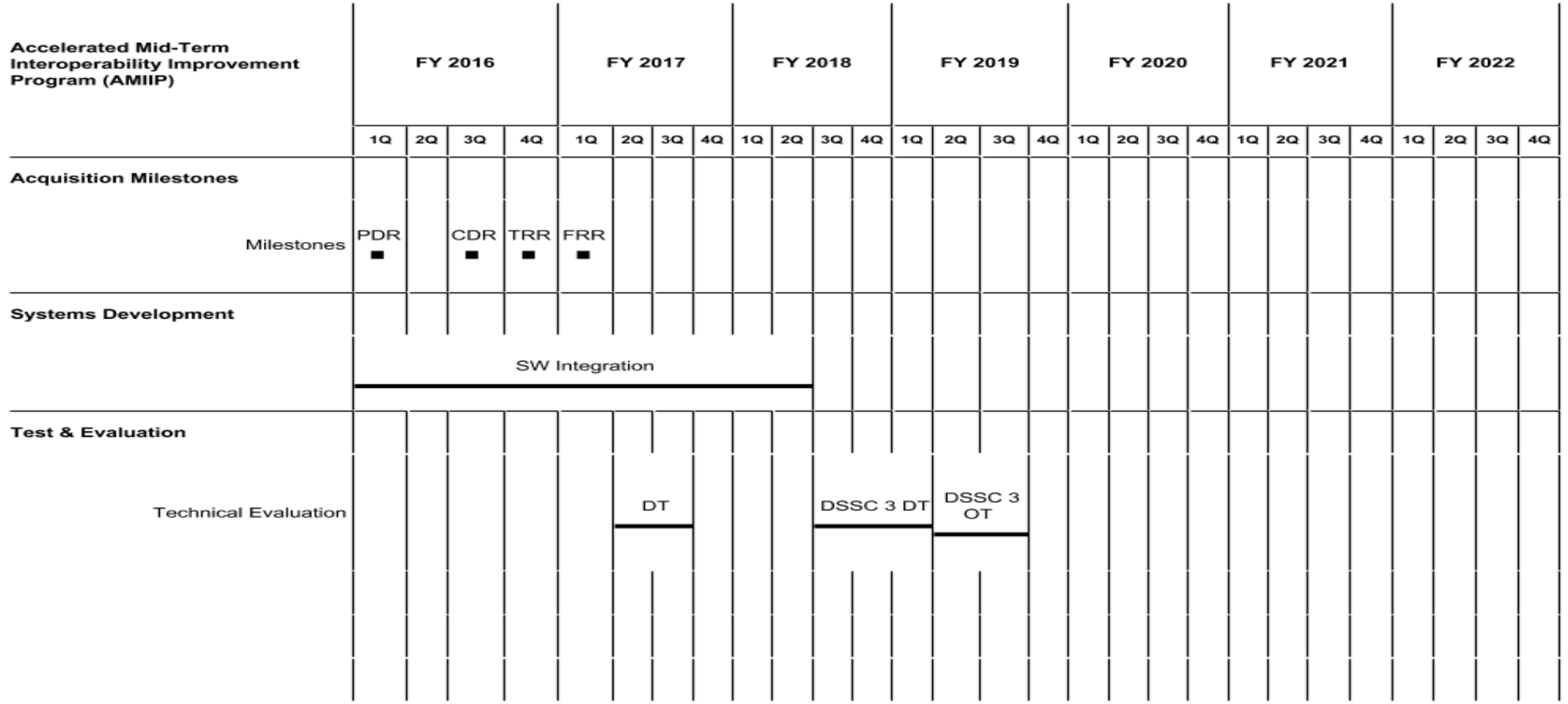
2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



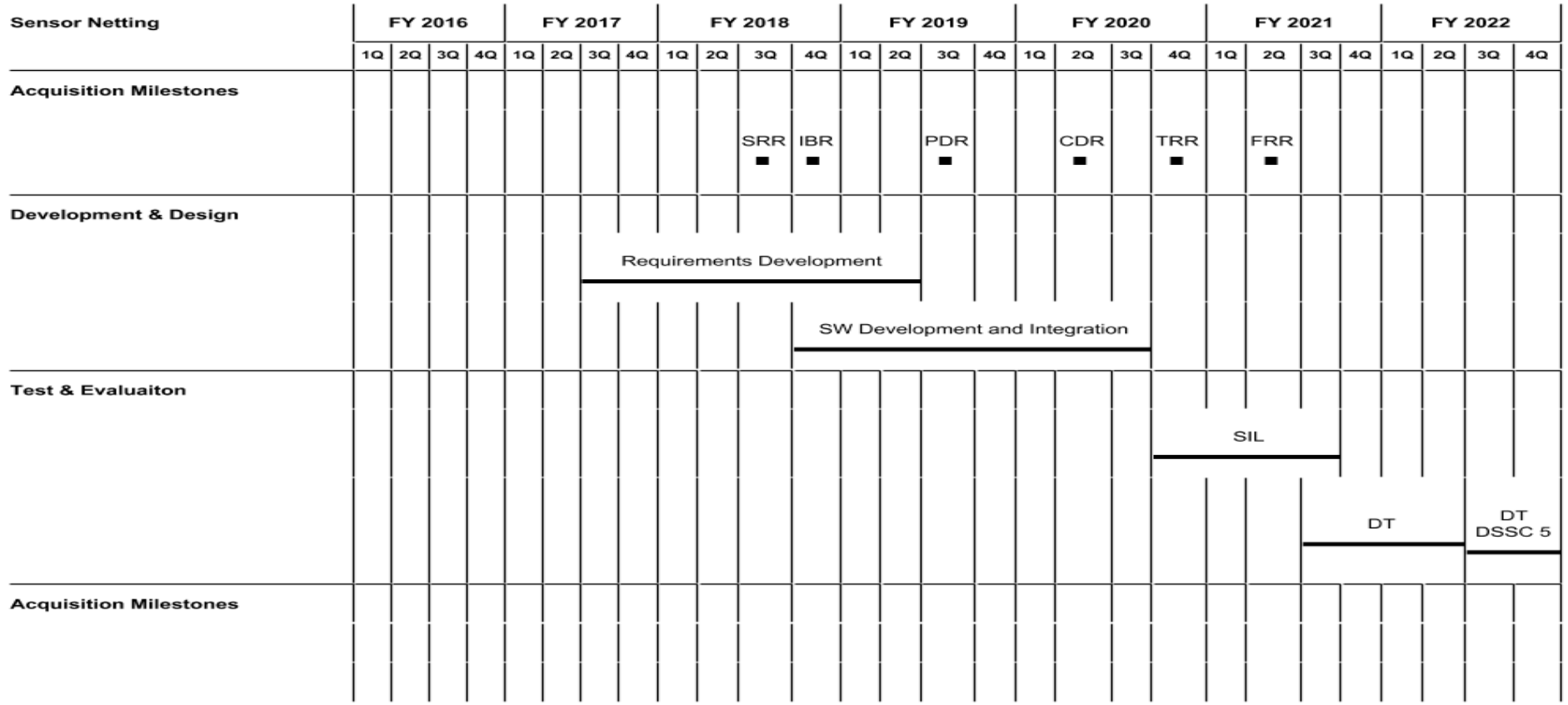
2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



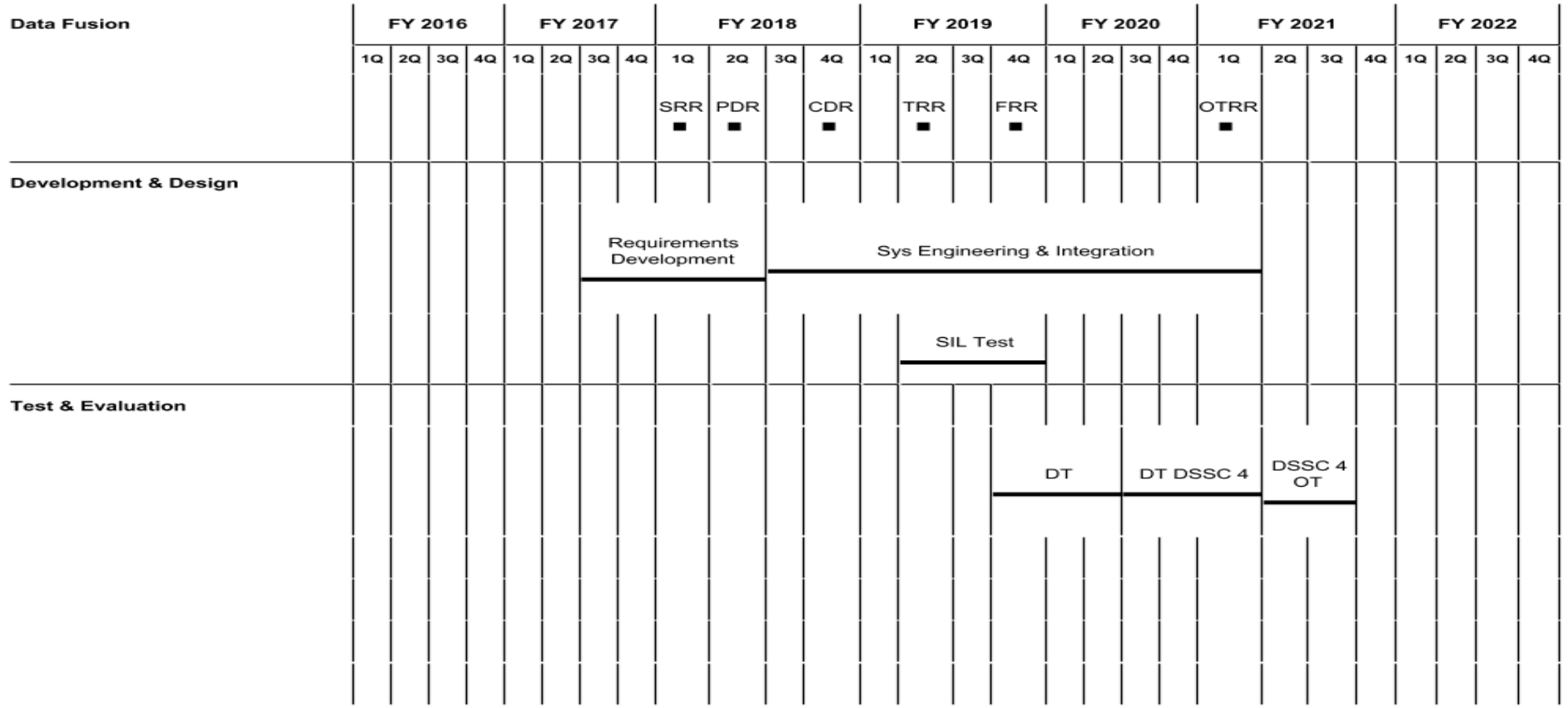
2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



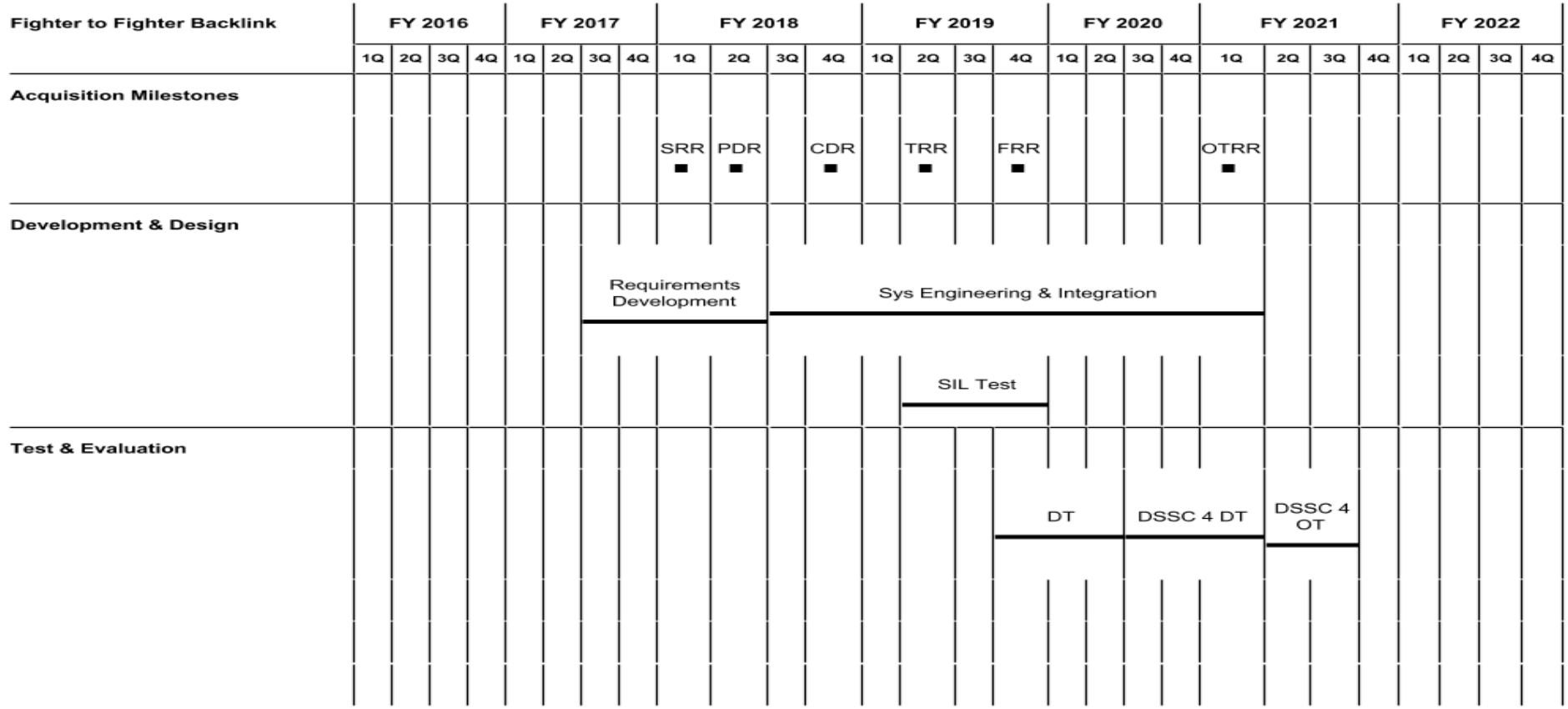
2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



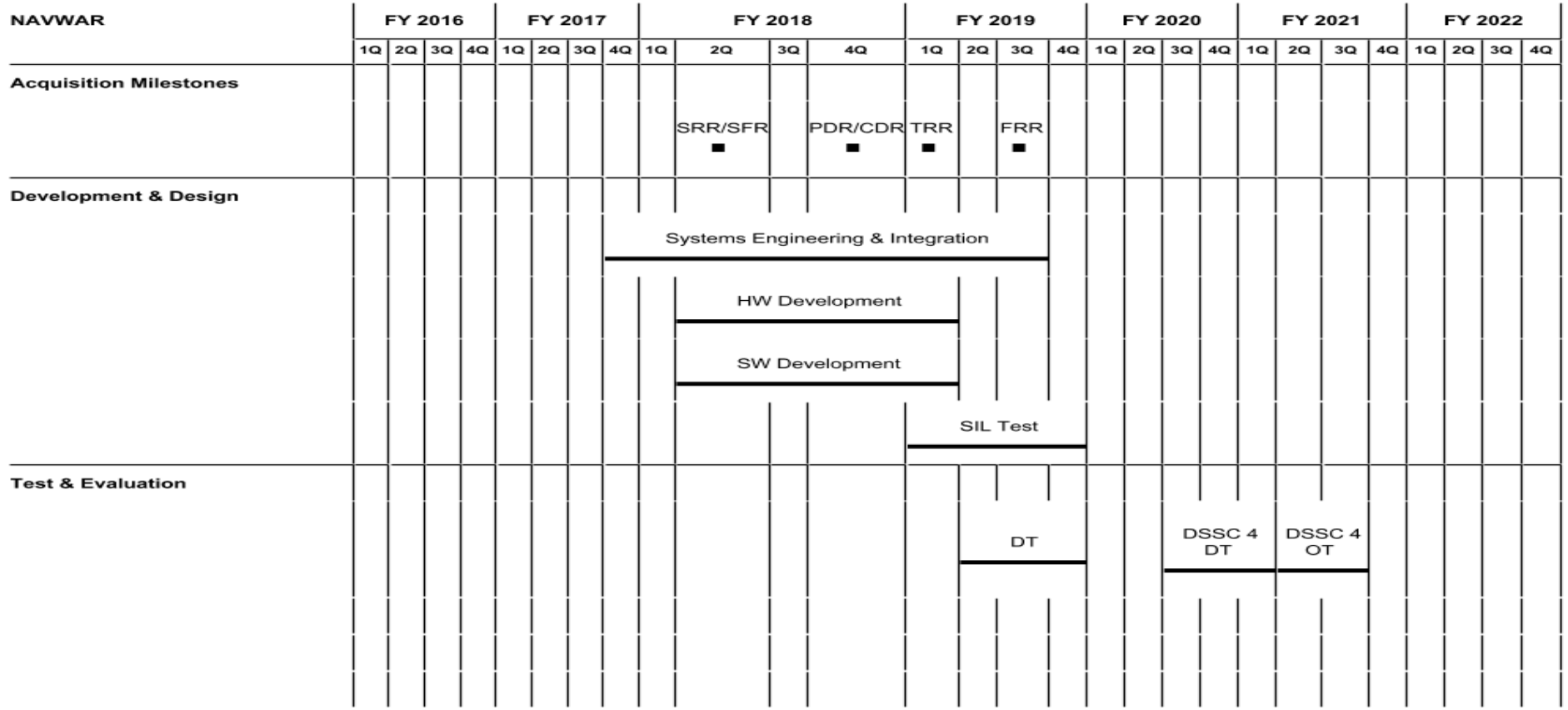
2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



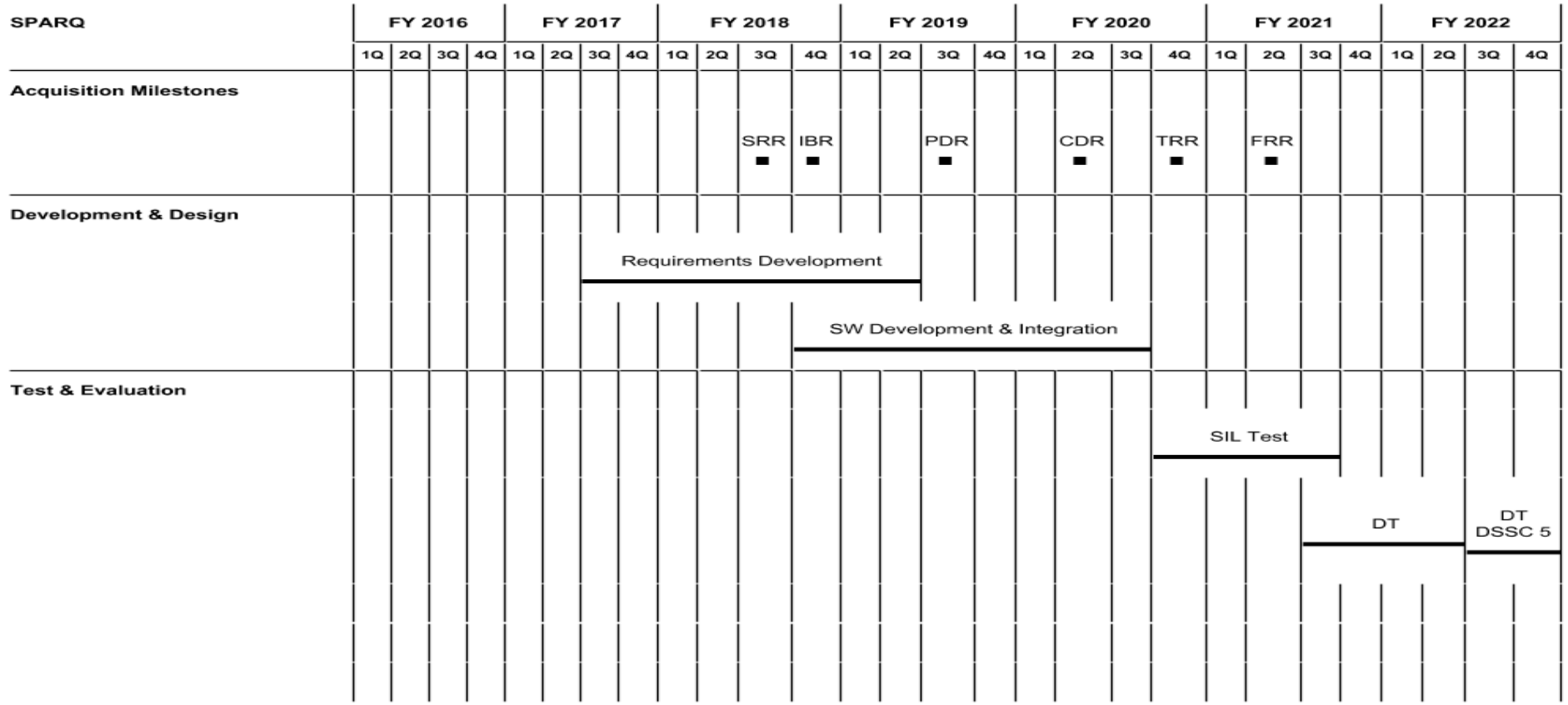
2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



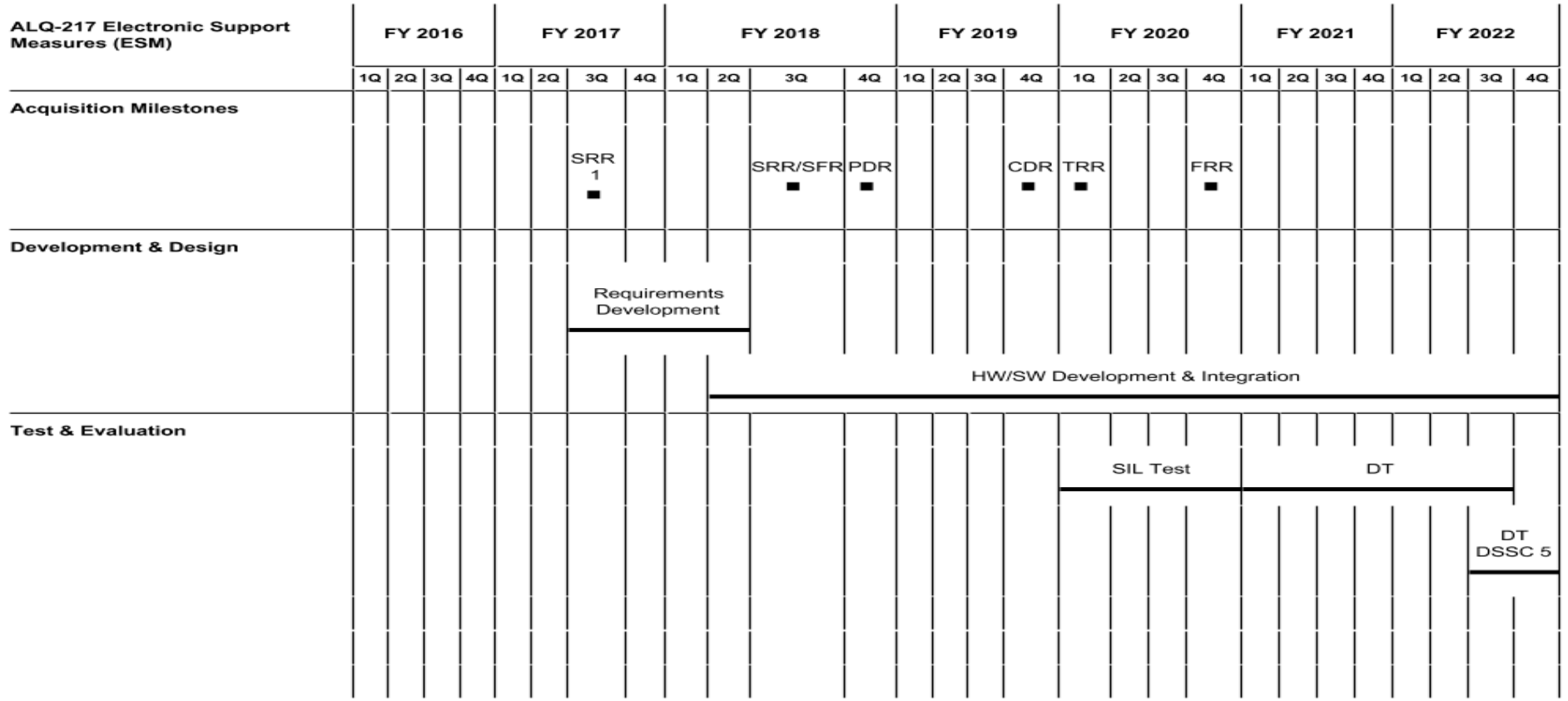
2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



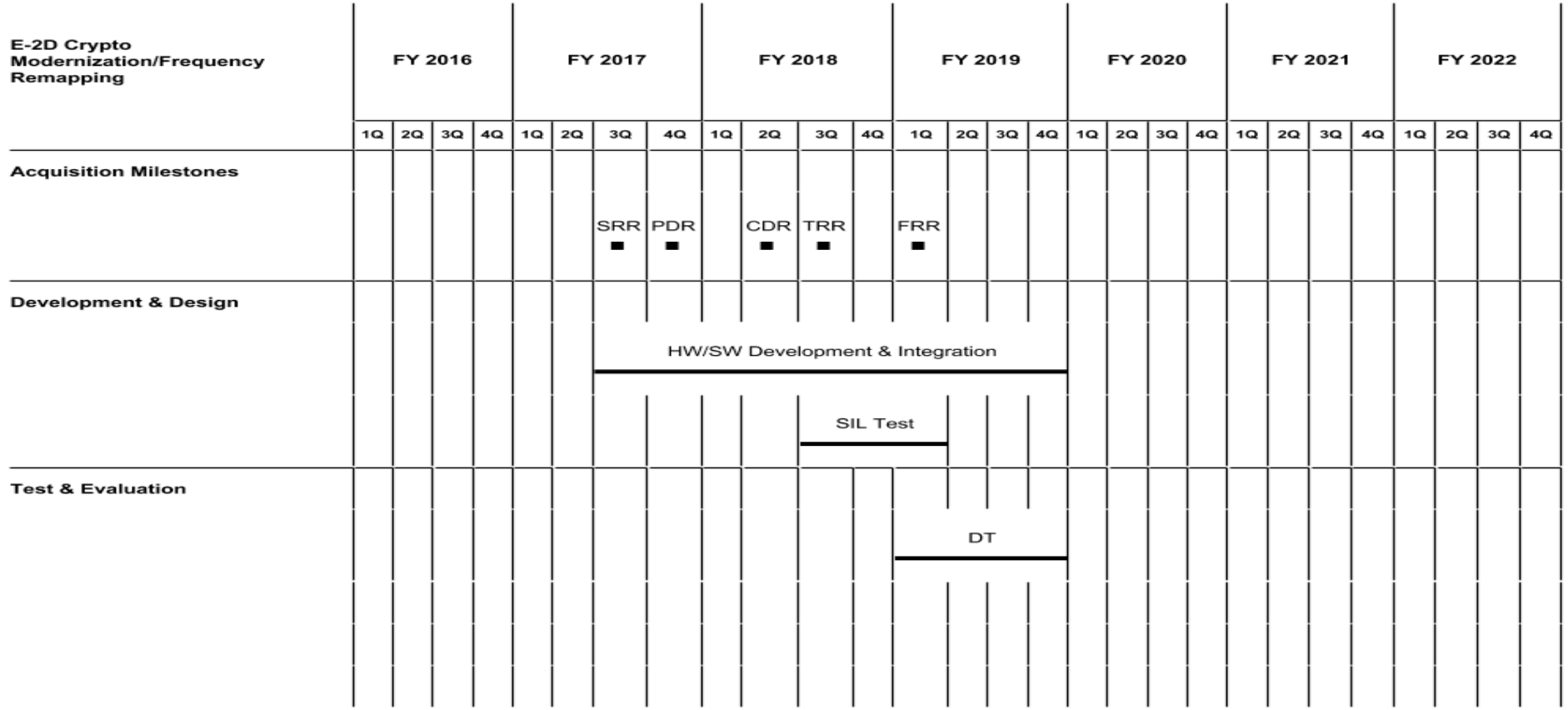
2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



2018PB - 0604234N - 3051

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*



2018PB - 0604234N - 3051

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
E-2D Adv Hawkeye				
Test & Evaluation: DSSC 2 Capability Dev & Testing	1	2016	3	2016
Test & Evaluation: DSSC 3 Capability Dev & Testing	3	2018	1	2019
Test & Evaluation: Software Merge - DSSC 3	2	2018	2	2018
Test & Evaluation: DSSC 4 Capability Dev & Testing	3	2020	1	2021
Test & Evaluation: Software Merge DSSC 4	3	2020	3	2020
Test & Evaluation: DSSC 5 Capability Dev & Testing	3	2022	4	2022
Test & Evaluation: Operational Evaluation: DSSC 2 Operational Test	4	2016	1	2017
Test & Evaluation: Operational Evaluation: DSSC 2 Fleet Release	4	2016	4	2016
Test & Evaluation: Operational Evaluation: DSSC 3 Operational Test	2	2019	4	2019
Test & Evaluation: Operational Evaluation: DSSC 3 Fleeet Release	4	2019	4	2019
Test & Evaluation: Operational Evaluation: DSSC 4 Operational Test	2	2021	3	2021
Test & Evaluation: Operational Evaluation: DSSC 4 Fleet Release	4	2021	4	2021
Test & Evaluation: Operational Evaluation: Software Merge DSSC 5	3	2022	3	2022
Production Milestones: Contract Awards: Production Milestones - FRP Lot IV CA	2	2016	2	2016
Production Milestones: Contract Awards: Production Milestones - FRP Lot V CA	2	2017	2	2017
Production Milestones: Contract Awards: Production Milestones - FRP Lot VI CA	2	2018	2	2018
Production Milestones: Contract Awards: Production Milestones - FRP Lot VII CA	2	2019	2	2019
Production Milestones: Contract Awards: Production Milestones - FRP Lot VIII CA	2	2020	2	2020
Production Milestones: Contract Awards: Production Milestones - FRP Lot IX CA	2	2021	2	2021
Production Milestones: Contract Awards: Production Milestones - FRP Lot X CA	1	2022	1	2022
Deliveries: Production Deliveries - FRP I (5 A/C)	1	2016	3	2016
Deliveries: Production Deliveries - FRP II (5 A/C)	1	2017	4	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Deliveries: Production Deliveries - FRP III (5 A/C)	1	2018	4	2018
Deliveries: Production Deliveries - FRP IV (4 A/C)	1	2019	4	2019
Deliveries: Production Deliveries - FRP IV (1 A/C)	1	2020	1	2020
Deliveries: Production Deliveries - FRP V (4 A/C)	1	2020	4	2020
Deliveries: Production Deliveries - FRP V (2 A/C)	1	2021	1	2021
Deliveries: Production Deliveries - FRP VI (3 A/C)	2	2021	4	2021
Deliveries: Production Deliveries - FRP VI (2 A/C)	1	2022	1	2022
Deliveries: Production Deliveries - FRP VII (3 A/C)	2	2022	4	2022
E-2D Adv Hawkeye Aerial Refueling				
System Development: Hardware/Software Development: Aerial Refueling - Engineering & Manufacturing Development	1	2016	4	2020
System Development: Reviews: Aerial Refueling - Test Readiness Review	4	2016	4	2016
System Development: Reviews: Aerial Refueling - Production Readiness Review	4	2017	4	2017
System Development: Reviews: Aerial Refueling - Physical Configuration Audit	2	2018	2	2018
System Development: Reviews: Aerial Refueling - Operational Test Readiness Review	1	2019	1	2019
System Development: Reviews: Aerial Refueling - Initial Operational Capability	2	2020	2	2020
Test & Evaluation: Aerial Refueling - Probe Static Test	1	2016	2	2016
Test & Evaluation: Aerial Refueling - Aircraft Installation	2	2016	4	2017
Test & Evaluation: Aerial Refueling - First Flight	1	2017	1	2017
Test & Evaluation: Developmental Flight Test: Developmental Flight Test	1	2017	3	2018
Test & Evaluation: Developmental Flight Test: Developmental Test	4	2018	1	2019
Test & Evaluation: Developmental Flight Test: Opertational Flight Test	2	2019	3	2019
E-2D Counter Electronic Attack				
System Development: Software Development: Counter Electronic Attack - SW Development	1	2016	1	2018
System Development: Software Development: Counter Electronic Attack - SIL Integration	2	2018	4	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
System Development: Software Development: Counter Electronic Attack - System Requirements Review	3	2016	3	2016
System Development: Software Development: Counter Electronic Attack - Preliminary Design Review	1	2017	1	2017
System Development: Software Development: Counter Electronic Attack - Critcial Design Review	3	2017	3	2017
System Development: Software Development: Counter Electronic Attack - TRR/FRR	4	2018	4	2018
Test & Evaluation: Developmental T&E: Counter Electronic Attack - DT&E Tech Evaluation	4	2018	2	2019
Test & Evaluation: Operational T&E: Developmental Test	3	2020	1	2021
Test & Evaluation: Operational T&E: Operational Test	2	2021	3	2021
E-2D MIDS/JTRS Tactical Targeting Networking Technology (TTNT)				
System Development & Design: TTNT HPA Development & Design: TTNT - System Requirements Review	4	2016	4	2016
System Development & Design: TTNT HPA Development & Design: TTNT High Power Amplifier Preliminary Design Review	1	2017	1	2017
System Development & Design: TTNT HPA Development & Design: TTNT High Power Amplifier Critical Design Review	3	2017	3	2017
System Development & Design: TTNT HPA Development & Design: TTNT High Power Amplifier Test Readiness Review	2	2018	2	2018
System Development & Design: TTNT HPA Development & Design: System Development & Design	1	2016	1	2019
System Development & Design: TTNT MIDS/JTRS TTNT Integration: TTNT - System Requirements Review	3	2016	3	2016
System Development & Design: TTNT MIDS/JTRS TTNT Integration: TTNT - Preliminary Design Review	2	2017	2	2017
System Development & Design: TTNT MIDS/JTRS TTNT Integration: TTNT - Critical Design Review	1	2018	1	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
System Development & Design: TTNT MIDS/JTRS TTNT Integration: TTNT -Test Readiness Review	3	2018	3	2018
System Development & Design: TTNT MIDS/JTRS TTNT Integration: TTNT - Functional Readiness Review	4	2018	4	2018
System Development & Design: TTNT MIDS/JTRS TTNT Integration: TTNT - Production Readiness Review	1	2020	1	2020
System Development & Design: TTNT MIDS/JTRS TTNT Integration: System Development & Design	2	2016	1	2019
Test & Evaluation: MIDS/JTRS TTNT Developmental Test/Operational Test: MIDS/ JTRS/TTNT - Developmental Test	4	2018	3	2019
Test & Evaluation: MIDS/JTRS TTNT Developmental Test/Operational Test: MIDS/ JTRS/TTNT - Developmental Test DSSC 4	3	2020	1	2021
Test & Evaluation: MIDS/JTRS TTNT Developmental Test/Operational Test: MIDS/ JTRS/TTNT Operational Test DSSC 4	2	2021	3	2021
E-2D SIPRChat				
Acquisition Milestones: Milestones: SIPRChat - Preliminary Design Review	2	2017	2	2017
Acquisition Milestones: Milestones: SIPRChat - Critical Design Review	4	2017	4	2017
Acquisition Milestones: Milestones: SIPRChat -Test Readiness Review	2	2018	2	2018
Acquisition Milestones: Milestones: SIPRChat - Functional Readiness Review	3	2018	3	2018
System Development: Hardware & Software Integration	1	2016	2	2018
Test & Evaluation: Developmental Test/Operational Test: Developmental Test	3	2018	4	2018
Test & Evaluation: Developmental Test/Operational Test: Developmental Test DSSC 4	3	2020	1	2021
Test & Evaluation: Developmental Test/Operational Test: Operational Test	2	2021	3	2021
Accelerated Mid-Term Interoperability Improvement Program (AMIIP)				
Acquisition Milestones: Milestones: Preliminary Design Review	1	2016	1	2016
Acquisition Milestones: Milestones: Critical Design Review	3	2016	3	2016
Acquisition Milestones: Milestones: Test Readiness Review	4	2016	4	2016
Acquisition Milestones: Milestones: Fleet Readiness Review	1	2017	1	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Systems Development: Software Integration	1	2016	2	2018
Test & Evaluation: Technical Evaluation: Developmental Test	2	2017	3	2017
Test & Evaluation: Technical Evaluation: Developmental Test DSSC 3	3	2018	1	2019
Test & Evaluation: Technical Evaluation: Operational Test DSSC 3	2	2019	3	2019
Sensor Netting				
Acquisition Milestones: System Requirements Review	3	2018	3	2018
Acquisition Milestones: Integrated Baseline Review	4	2018	4	2018
Acquisition Milestones: Preliminary Design Review	3	2019	3	2019
Acquisition Milestones: Critical Design Review	2	2020	2	2020
Acquisition Milestones: Test Readiness Review	4	2020	4	2020
Acquisition Milestones: Functional Readiness Review	2	2021	2	2021
Development & Design: Requirement Development	3	2017	2	2019
Development & Design: Software Development and Integration	4	2018	3	2020
Test & Evaluaiton: SIL Test	4	2020	3	2021
Test & Evaluaiton: Development Test	3	2021	2	2022
Test & Evaluaiton: Development Test DSSC 5	3	2022	4	2022
Data Fusion				
System Requirements Review	1	2018	1	2018
Preliminary Design Review	2	2018	2	2018
Critical Design Review	4	2018	4	2018
Test Readiness Review	2	2019	2	2019
Functional Readiness Review	4	2019	4	2019
Operational Test Readiness Review	1	2021	1	2021
Development & Design: Development & Integration	3	2017	2	2018
Development & Design: Systems Engineering & Integration	3	2018	1	2021
Development & Design: SIL Test	2	2019	4	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test & Evaluation: Developmental Test	4	2019	2	2020
Test & Evaluation: Developmental Test DSSC 4	3	2020	1	2021
Test & Evaluation: Operational Test DSSC 4	2	2021	3	2021
Fighter to Fighter Backlink				
Acquisition Milestones: System Requirements Review	1	2018	1	2018
Acquisition Milestones: Preliminary Design Review	2	2018	2	2018
Acquisition Milestones: Critical Design Review	4	2018	4	2018
Acquisition Milestones: Test Readiness Review	2	2019	2	2019
Acquisition Milestones: Functional Readiness Review	4	2019	4	2019
Acquisition Milestones: Operational Test Readiness Review	1	2021	1	2021
Development & Design: Development & Integration	3	2017	2	2018
Development & Design: Systems Engineering & Integration	3	2018	1	2021
Development & Design: SIL Test	2	2019	4	2019
Test & Evaluation: Developmental Test	4	2019	2	2020
Test & Evaluation: Developmental Test DSSC 4	3	2020	1	2021
Test & Evaluation: Operational Test DSSC 4	2	2021	3	2021
NAVWAR				
Acquisition Milestones: System Rquirements Review/System Functional Review	2	2018	2	2018
Acquisition Milestones: Preliminary Design Review/Critical Design Review	4	2018	4	2018
Acquisition Milestones: Test Readiness Reivew	1	2019	1	2019
Acquisition Milestones: Functional Readiness Review	3	2019	3	2019
Development & Design: Systems Engineering & Integration	4	2017	3	2019
Development & Design: Hardware Development	2	2018	1	2019
Development & Design: Software Development	2	2018	1	2019
Development & Design: System Integration Lab Test	1	2019	4	2019
Test & Evaluation: Developmental Test	2	2019	4	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test & Evaluation: Developmental Test DSSC 4	3	2020	1	2021
Test & Evaluation: Operational Testing DSSC 4	2	2021	3	2021
SPARQ				
Acquisition Milestones: System Requirements Review	3	2018	3	2018
Acquisition Milestones: Integrated Baseline Review	4	2018	4	2018
Acquisition Milestones: Preliminary Design Review	3	2019	3	2019
Acquisition Milestones: Critical Design Review	2	2020	2	2020
Acquisition Milestones: Test Readiness Review	4	2020	4	2020
Acquisition Milestones: Functional Readiness Review	2	2021	2	2021
Development & Design: Requirement Development	3	2017	2	2019
Development & Design: Software Development and Integration	4	2018	3	2020
Test & Evaluation: SIL Test	4	2020	3	2021
Test & Evaluation: Developmental Test	3	2021	2	2022
Test & Evaluation: Developmental Test DSSC 5	3	2022	4	2022
ALQ-217 Electronic Support Measures (ESM)				
Acquisition Milestones: System Requirements Review 1	3	2017	3	2017
Acquisition Milestones: System Requirements Review 2/System Functional Review	3	2018	3	2018
Acquisition Milestones: Preliminary Design Review	4	2018	4	2018
Acquisition Milestones: Critical Design Review	4	2019	4	2019
Acquisition Milestones: Test Readiness Review	1	2020	1	2020
Acquisition Milestones: Functional Readiness Review	4	2020	4	2020
Development & Design: Requirements Development	3	2017	2	2018
Development & Design: HW/SW Development & Integration	2	2018	4	2022
Test & Evaluation: SIL Test	1	2020	4	2020
Test & Evaluation: Developmental Test	1	2021	3	2022
Test & Evaluation: Developmental Test DSSC 5	3	2022	4	2022

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604234N / *Advanced Hawkeye*	**Project (Number/Name)** 3051 / *E-2D Adv Hawkeye*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
E-2D Crypto Modernization/Frequency Remapping				
Acquisition Milestones: System Requirements Review	3	2017	3	2017
Acquisition Milestones: Preliminary Design Review	4	2017	4	2017
Acquisition Milestones: Critical Design Review	2	2018	2	2018
Acquisition Milestones: Test Readiness Review	3	2018	3	2018
Acquisition Milestones: Functional Readiness Review	1	2019	1	2019
Development & Design: Hdw/SW Development & Integration	3	2017	4	2019
Development & Design: SIL Test	3	2018	1	2019
Test & Evaluation: Developmental Test	1	2019	4	2019

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604234N / *Advanced Hawkeye*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	8.207	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.207
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Congressional Add. Program increase for E-2D Advanced Hawkeye (AHE) radar development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017
Congressional Add: Adv Radar Innovation Fund - Air (Cong)	8.207	0.000
FY 2016 Accomplishments: N/A		
FY 2017 Plans: N/A		
Congressional Adds Subtotals	8.207	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Not required for Congressional Add.

E. Performance Metrics

Not required for Congressional Add.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604245N *I H-1 Upgrades*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	92.463	26.768	27.441	61.288	-	61.288	59.827	43.705	37.584	37.541	Continuing	Continuing
3359: *H-1 Improvements*	92.463	26.768	27.441	61.288	-	61.288	59.827	43.705	37.584	37.541	Continuing	Continuing

A. Mission Description and Budget Item Justification

The mission of the AH-1 attack helicopter is to provide rotary wing close air support, anti-armor, armed escort, armed/visual reconnaissance, survivability enhancements, and fire support coordination capabilities under day/night and adverse weather conditions. The mission of the UH-1 utility helicopter is to provide command and control and combat assault support under day/night and adverse weather conditions and special operations support; supporting arms coordination and aeromedical evacuation. Major modifications for both aircraft include 37 AH-1Ws converted to AH-1Zs, build 152 new AH-1Zs, remanufacture ten (10) H-1N helicopters and build 150 new UH-1Y models. AH-1Z and UH-1Y models include a 4-bladed, composite rotor system with semi-automatic bladefold, performance-matched transmissions, T700 Engine Digital Electronic Control Units, 4-bladed tail rotors and drive systems, more effective stabilizers, upgraded landing gear, and common, fully integrated cockpits and avionics systems. These upgrades add 10,000 flight hours to AH-1Z/UH-1Y airframes. The fully integrated cockpits reduce operator workload and improve situational awareness, thus increasing safety and reducing the rate of aircraft attrition. They provide considerable growth potential for future weapon systems and avionics to significantly increase mission effectiveness and survivability. The cockpits also include integration of onboard mission planning, communications, digital fire control, self-navigation, night navigation/targeting, air-to-ground missile and air-launched intercept missile weapon systems management in nearly identical crew stations, which significantly reduces training requirements. These upgrades maximize commonality between the two aircraft and provide needed improvements in crew and passenger survivability, payload, power available, endurance, range, airspeed, maneuverability and supportability.

This budget is required for follow-on improvements to H-1 aircraft via integration of sensors and weapons, avionics, and air vehicle components that will address deficiencies, systems safety, obsolescence, readiness, reliability, supportability, and relevance in the battlespace. Improvements will include all associated System Configuration Set (SCS) updates as well as integration and testing related to the aircraft platforms.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	27.235	27.441	32.625	-	32.625
Current President's Budget	26.768	27.441	61.288	-	61.288
Total Adjustments	-0.467	0.000	28.663	-	28.663
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.467	0.000			
• Program Adjustments	0.000	0.000	29.231	-	29.231

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*		R-1 Program Element (Number/Name) PE 0604245N *I H-1 Upgrades*			
• Rate/Misc Adjustments	0.000	0.000	-0.568	-	-0.568

Change Summary Explanation

Funding: FY2018 PB includes an increase of $17.6M in Primary Hardware Development over FY2017 PB. This increase is due to structural and electrical improvements. Beginning in FY2018, progress has been made to support current and future development of UH-1Y & AH-1Z aircraft structural & electrical systems, subsystems, and components, supporting the future power needs of systems such as the Hellfire suite, Intrepid Tiger-2 (V3), AIM-9X upgrades, and other future capabilities. In addition, structural upgrades to auxiliary fuel capability, UH-1Y cabin floor boards, and weapons enhancements will increase mission flexibility, increase aircraft range and/or loiter time, and weapons employment to the warfighter.

Technical: None

Schedule: System Configuration Sets (SCS) will be continuously developed and released in conjunction with required hardware obsolescence and capability improvements. Software development as a whole are accounted for separately on the R-3 and are apportioned into development efforts for Avionics and Sensors & Weapons on the R-2a. Software is no longer portrayed separately on the R-2a or R-4 since SCS builds are linked to the development of hardware. The Mission Description section for Avionics and Sensors and Weapons state that SCS is part of each of the projects.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604245N / *H-1 Upgrades*				Project (Number/Name) 3359 / *H-1 Improvements*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
3359: *H-1 Improvements*	92.463	26.768	27.441	61.288	-	61.288	59.827	43.705	37.584	37.541	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The objective of H-1 Improvements is to provide follow-on Research, Development, Test and Evaluation efforts in support of all H-1 aircraft.

Air Vehicle and Engine improvements include analysis of structural data to formulate Damage Limits and Tolerances for structural components to reduce life cycle costs and maintenance workload; and redesign of structural components and drive system components to minimize excessive and premature wear, increase reliability, and improve existing design deficiencies. Additional air vehicle upgrades include: redesign of the aircraft power-generating and electrical components (generators, inverters, wiring) to support power requirements for existing and future systems (Aircraft Survivability Equipment, emerging electronic warfare, and Degraded Visual Environment), redesign of the Environmental Control System /Thermal Redesign to support cooling of Technology Refresh Mission Computer and other avionics, redesign to add an auxiliary fuel capability, Intrepid Tiger, and upgrades the UH-1Y cabin floor panels.

Avionics improvements target digital inter-operability, integrated avionics, safety & survivability, and situational awareness for both the pilot and aircrew safety. This includes integrating Joint Battle Command-Platform (JBC-P), Full Motion Video (FMV), Degraded Visual Environment (DVE), Helmet Mounted Display improvements, cockpit displays, precision and GPS non-precision landing capability, Crash Survivable Flight Incident Recorder, collision avoidance, improved Embedded Global Positioning System (EGI), Inertial Navigation System (INS), targeting sensor systems and mission computer. H-1 capability improvements include improved Aircraft Survivability Equipment (ASE), digital operations & transfer of data, digital interoperability, digital video recording, video and data networking, and information integration with aviation combat elements and Marine Air Ground Task Force elements. Mandated capability efforts include CNS/ATM, Required Navigation Performance/Area Navigation (RNP/RNAV), GPS Selective Availability Anti-Spoofing Module (SAASM), Automatic Dependent Surveillance - Broadcast (ADS-B), Crash Survivable Flight Incident Recorder, development efforts required for Depot standup and incorporation of technology and information protection/Information Assurance in critical avionics and sensor systems. In addition, the goal is to reduce total ownership cost for H-1 aircraft and related support systems by improving reliability and maintainability of critical flight and avionics systems along with associated peculiar avionics support equipment and incorporating fact-of-life obsolescence solutions. All avionics improvements include related System Configuration Set (SCS) development updates and testing.

Sensors and Weapons improvements include hardware and software upgrades, reliability improvement initiatives, program security implementation and aircraft integration. Collectively, these improvements will provide additional capabilities to the warfighter improve reliability and allow for the interface between the sensors, helmet and precision guided munitions. Additionally, these enhancements will improve the overall design, produceability and maintainability of these systems. Specifically, the AN/ALQ-30 Target Sight System (TSS) will implement several block upgrade efforts with improvements to the IR Pointer, Laser and Cameras. The BRITE Star II will add additional capabilities for functionality, user improvement as well as Laser Spot Tracking. Both of these sensor improvements will be coupled with the Optomized TopOwl (OTO) improvements that include optics upgrades, reliability and human factors improvements to include Degraded Visual Environment (DVE), as well as advanced boresighting and mapping improvements that will aid in weapons accuracy. Improving and integrating weapon systems will align with these sensor and helmet upgrades to improve the overall accuracy and lethality of the H1 platform. Continued development, test and integration efforts with the Advanced Precision Kill Weapons (APKWS), M299 Launcher improvements, Digital Rocket Launcher (DRL), AIM-9X, the AN/ALQ-231 (V) Intrepid Tiger II Electronic Warfare Pod

and the Joint Air-to-Ground Missile (JAGM) Hellfire missile will follow in FY17. All sensors and weapons improvements include related System Configuration Set (SCS) development updates and testing.

These improvements will provide considerable growth potential for future weapon systems, air vehicle improvements, software improvements, and avionics upgrades, which will significantly increase mission effectiveness & survivability, while potentially reducing life cycle costs. The cockpits will also include integration of onboard mission planning, communications, digital fire control, self-navigation, night navigation/targeting, precision guided munitions, and air-launched intercept missile weapon systems management in nearly identical crew stations, which significantly reduce training requirements. These upgrades maximize commonality between all H-1 Type/Model/Series aircraft and provide needed improvements in crew and passenger reliability, survivability, payload, power available, endurance, range, airspeed, maneuverability and supportability.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: System Configuration Set Development	16.904	13.486	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: SCS 8.1 development completion. Continue SCS 8.2 with the design and development of Radar Warning Set AN/APR-39 D(V)2 (sensor/avionics) to correct obsolescence issue required to support Lot 14/FY 2017. Integrate the Advanced Data Transfer System (ADTS) needed for digital map data to meet Terrain Awareness Warning System (TAWS) mandate, and Airborne Network Switch (ANS) needed to switch multiple devices to communicate with the Tech Refresh Mission Computer (TRMC) via Ethernet. Integrate and test AN/ALE-47 Dispensing System software upgrades to increase the survivability of platforms against Infrared (IR) threats. Integrate Target Sight System (TSS) Laser Spot Tracker (LST) to increase platform target acquisition capability. Complete Developmental Test (DT) and Operation Testing (OT) for SCS 8.2. Commence SCS 8.3 ANS/ADTS software design, development, and integration.					
FY 2017 Plans: Continue SCS 8.3 ANS/ADTS software design, development, and integration. SCS 8.3 is completed with DT and OT planned for end of FY17 for digital map data to support follow on TAWS integration and multiple device communication within the platform to the TRMC. Commence SCS 8.4 software development for integration of JAGM and establish requirements for SCS 8.5 TAWS software development and integrations.					
FY 2018 Base Plans: N/A					
FY 2018 OCO Plans: N/A					
Title: Weapons and Sensors Testing and Integration	0.986	1.046	7.381	0.000	7.381

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604245N / *H-1 Upgrades*	**Project (Number/Name)** 3359 / *H-1 Improvements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Flight testing of TSS Laser Spot Tracker/HDTV/1K Forward Looking Infra Red (FLIR) Software and Hardware improvements as well as begin conducting captive carriage and development testing of the Joint Air-to-Ground Missile as part of SCS 8.2 or later version. ***FY 2017 Plans:*** FY17 - Continue flight testing of TSS Laser Spot Tracker/HDTV/1K FLIR software and hardware improvements (including -80 turret) as well as TSS TEU re-design testing. Continue captive carriage testing of the JAGM. ***FY 2018 Base Plans:*** Develop, test and integrate hardware, software changes to address parts obsolescence and deficiencies identified in test for aircraft sensors; Target Sight Systems (TSS) TEU-VPX OFP. Define and initiate a Requirements Trade Study for a Block Upgrade to the TSS. Continue software integration of JAGM and test functionality and compatibility with aircraft software in support of missile developmental testing. Initiate requirements analysis and develop, test and integrate hardware, software changes for a redesigned Digital Rocket Launcher (DRL). Develop, test and integrate hardware changes to the OTO Helmet, to include Display Module improvements and defining Cockpit Mapping Robot requirements. Continue with development testing of JAGM and DRL. Conduct DT Assist for JAGM and Operational Assessments of BS II and Intrepid Tiger improvements. ***FY 2018 OCO Plans:*** N/A					
Title: Air Vehicle and Engines Improvements	5.426	9.250	32.575	0.000	32.575
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue redesign of structural components to minimize excessive and premature wear, increase reliability, and improve existing design deficiencies. Initiate redesign of the auxiliary fuel system, and initiate aerial refueling capability. Continue air vehicle and engine improvements upgrades to include redesign of the aircraft power-generating components (generator, inverters, wiring) to support power requirements for existing and future systems (avionics, sensors and weapons) and to reduce aircraft weight. Continue Environmental Control System/Thermal Redesign to support other avionics on the UH-1Y/AH-1Z. ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604245N / *H-1 Upgrades*	**Project (Number/Name)** 3359 / *H-1 Improvements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue redesign of structural components to minimize excessive and premature wear, increase reliability, and improve existing design deficiencies. Continue redesign of the auxiliary fuel system. Continue air vehicle and engine improvements upgrades to include redesign of the aircraft power-generating components (generator, inverters, wiring) to support power requirements for existing and future systems (avionics, sensors and weapons) and to reduce aircraft weight. Continue Environmental Control System/Thermal Redesign to support other avionics on the UH-1Y/AH-1Z. Initiate survivability upgrades (canted forward chaff buckets, blast frag canopy, opaque armor, self-sealing fuel tanks, sump and backing board.) ***FY 2018 Base Plans:*** Continue redesign of structural components to minimize excessive and premature wear, increase reliability, increase aircraft load capabilities, and improve existing design deficiencies. Continue redesign of the fuel system, and aerial refueling capability. Continue AC/DC generator SBIR and initiate redesign of the aircraft electrical power-generating components and aircraft re-wiring to support power requirements for existing and future systems to include stores select-ability, future Avionics Survivability Equipment (ASE), emerging Electronic Warfare (EW), and Degraded Visual Environment (DVE) systems. Continue Environmental Control Systems/Thermal Redesign to support other avionics on the UH-1Y/AH-1Z. Continue redesign of the drive system components (rotor brake/slip ring/standpipe/gearboxes/drive shaft and couplers/chip detectors) to increase reliability and reduce high cost and/or failure rates. Continue upgrades and redesigns of main and tail rotor blades. Continue survivability upgrades (canted forward chaff buckets, blast frag canopy, opaque armor, self-sealing fuel tanks, sump and backing board). Initiate UH-1Y structural improvements to increase capability including Intrepid Tiger, auxiliary fuel, cabin floor boards to prevent corrosion, floor panel access, and other structural reinforcements. ***FY 2018 OCO Plans:*** N/A					
Title: Avionics Improvements	3.452	3.659	21.332	0.000	21.332
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue avionics development & testing on Digital Map and data storage capabilities, digital video recording, avionics components obsolescence and regression testing; continue development efforts on Terrain Awareness Warning System (TAWS). Continue enhanced digital capability efforts, Aircraft Survivability Equipment (ASE) improvements, Helmet Mounted Display improvements, avionics systems obsolescence mitigation efforts, development of peculiar avionics support equipment, and development of automatic test equipment. Continue Full Motion Video (FMV) design/development and digital interoperability efforts. Initiate development efforts					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604245N / *H-1 Upgrades*	**Project (Number/Name)** 3359 / *H-1 Improvements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
on Wireless Intercommunication Systems (WICS), Joint Battlefield Command - Platform (JBC-P), Mobile User Objective System (MUOS) for over the horizon communication, Degraded Visual Environment and collision avoidance capability. Initiate Embedded Global Positioning System/Inertial Navigation System (EGI) upgrade for Aircraft Dependent Surveillance Broadcast (ADS-B), Selective Availability Anti- Spoofing Module (SAASM), GPS non-precision approach capability and Navigation Warfare (NAVWAR) GPS signal protection efforts. Also initiate UH-1Y aft cabin display for situational awareness and portable tablet Marine Air-Ground Task Force (MAGTF) digital interoperability coordination capability along with digital helmet mounted display capabilities. Initiate integration of Crash Survivable Flight Incident Recorder and Improved Vehicle Health and Monitoring System.					
FY 2017 Plans: Initiate avionics development & testing on ASE ALE-47 Electronic Warfare and APR-39D(V)2; Aircraft Network Switch (ANS)/Advanced Data Transfer System and Satellite Communications. Continue avionics development & testing on Digital Map and data storage capabilities, digital video recording, avionics components obsolescence and regression testing; continue development efforts on TAWS; enhanced digital capability efforts, other ASE improvements, Helmet Mounted Display improvements, avionics systems obsolescence mitigation efforts, development of peculiar avionics support equipment, and development of automatic test equipment; digital interoperability efforts, development efforts on WICS, JBC-P, MUOS for over the horizon communication, Degraded Visual Environment and collision avoidance capability, EGI upgrade for ADS-B, SAASM, GPS non-precision approach capability and NAVWAR GPS signal protection efforts; UH-1Y aft cabin display for situational awareness and portable tablet MAGTF digital interoperability coordination capability; additional waveform functionality; along with digital helmet mounted display capabilities, and integration of Crash Survivable Flight Incident Recorder and Improved Vehicle Health and Monitoring System.					
FY 2018 Base Plans: Continue design and development for digital interoperability improvements, avionics systems obsolescence mitigation efforts, and peculiar avionics support equipment, automatic test equipment, mission computer SCS improvements, satellite communication improvement, digital interoperability application of Variable Message Formatting (VMF), Aircraft Dependent Surveillance Broadcast (ADS-B), Selective Availability Anti-Spoofing Module (SAASM), GPS non-precision approach capability and Navigation Warfare (NAVWAR) GPS signal protection efforts; UH-1Y aft cabin display for situational awareness and portable tablet Marine Air-Ground Task Force (MAGTF) improvements; Continue development and testing for digital interoperability improvements, additional waveform functionality, and avionics systems obsolescence mitigation efforts, and peculiar avionics support equipment, automatic test equipment and mission computer SCS improvements, ASE, EW, Satellite Communications Full Motion Video, UH-1Y Aft Cabin Display and additional waveform					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604245N / *H-1 Upgrades*	**Project (Number/Name)** 3359 / *H-1 Improvements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
functionality, Aircraft Dependent Surveillance Broadcast (ADS-B), digital map and data storage capabilities, digital video recording, avionics components obsolescence mitigation and regression testing; Continue enhancement efforts digital capability efforts, digital map and data storage capability, digital video recording, avionics components obsolescence and regression testing, display systems, digital interoperability, satellite communication, digital systems upgrades, avionics components obsolescence mitigation and regression testing, enhanced digital capability efforts, other ASE improvements, avionics systems obsolescence mitigation efforts, development of peculiar avionics support equipment, and development of automatic test equipment; Initiate design and development on TAWS, Wireless Intercommunication Systems (WICS), Joint Battlefield Command - Platform (JBC-P), Mobile User Objective System (MUOS) for over the horizon communication, Degraded Visual Environment and collision avoidance capability, Embedded Global Positioning System/Inertial Navigation System (EGI) upgrade for Selective Availability Anti-Spoofing Module (SAASM), GPS non-precision approach capability and Navigation Warfare (NAVWAR) GPS signal protection efforts, CSFIR, and Link tactical data exchange. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	26.768	27.441	61.288	0.000	61.288

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0178: *UH-1Y/AH-1Z APN1*	847.308	815.946	735.661	-	735.661	644.605	64.583	9.012	9.188	11.415	10,223.435
• APN/0178C: *UH-1Y/AH-1Z APN1 Advance Procurement*	56.168	57.232	42.082	-	42.082	0.000	0.000	0.000	0.000	0.000	508.516

Remarks

D. Acquisition Strategy

Follow-on H-1 Improvements will be developed using cost plus fixed fee type contracts.

E. Performance Metrics

Continue hardware and software development and test for follow-on H-1 Improvements.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604245N / *H-1 Upgrades*	Project (Number/Name) 3359 / *H-1 Improvements*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	BHTI : Amarillo, TX	15.772	1.237	Jan 2016	5.140	Jan 2017	22.748	Jan 2018	-		22.748	36.870	81.767	81.767
Primary Hardware Development	SS/CPFF	Northrup Grumman : Woodland Hills, CA	2.066	0.648	Nov 2015	0.000		0.000		-		0.000	0.000	2.714	2.714
Systems Engineering	WR	NAWCAD : Patuxent River, MD	1.913	0.516	Nov 2015	0.525	Nov 2016	0.677	Nov 2017	-		0.677	2.790	6.421	-
		Subtotal	19.751	2.401		5.665		23.425		-		23.425	39.660	90.902	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	SS/CPFF	BHTI : Amarillo, TX	20.198	0.000	Feb 2016	5.061	Feb 2017	9.131	Feb 2018	-		9.131	14.983	49.373	49.373
Software Development	SS/FP	Northrup Grumman : Woodland Hills, CA	3.201	3.139	Nov 2015	1.664	Nov 2016	1.882	Nov 2017	-		1.882	19.446	29.332	29.332
Software Development	WR	NAWCWD : China Lake, CA	21.645	1.707	Nov 2015	6.761	Nov 2016	3.523	Nov 2017	-		3.523	14.519	48.155	-
		Subtotal	45.044	4.846		13.486		14.536		-		14.536	48.948	126.860	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test and Evaluation	WR	COMOPTEVFOR : Norfolk, VA	4.352	2.238	Nov 2015	0.810	Nov 2016	2.953	Nov 2017	-		2.953	7.616	17.969	-
Development Test and Evaluation	WR	NAWCAD : Patuxent River, MD	20.702	15.782	Nov 2015	6.225	Nov 2016	19.105	Nov 2017	-		19.105	77.216	139.030	-
		Subtotal	25.054	18.020		7.035		22.058		-		22.058	84.832	156.999	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604245N / *H-1 Upgrades*	Project (Number/Name) 3359 / *H-1 Improvements*	

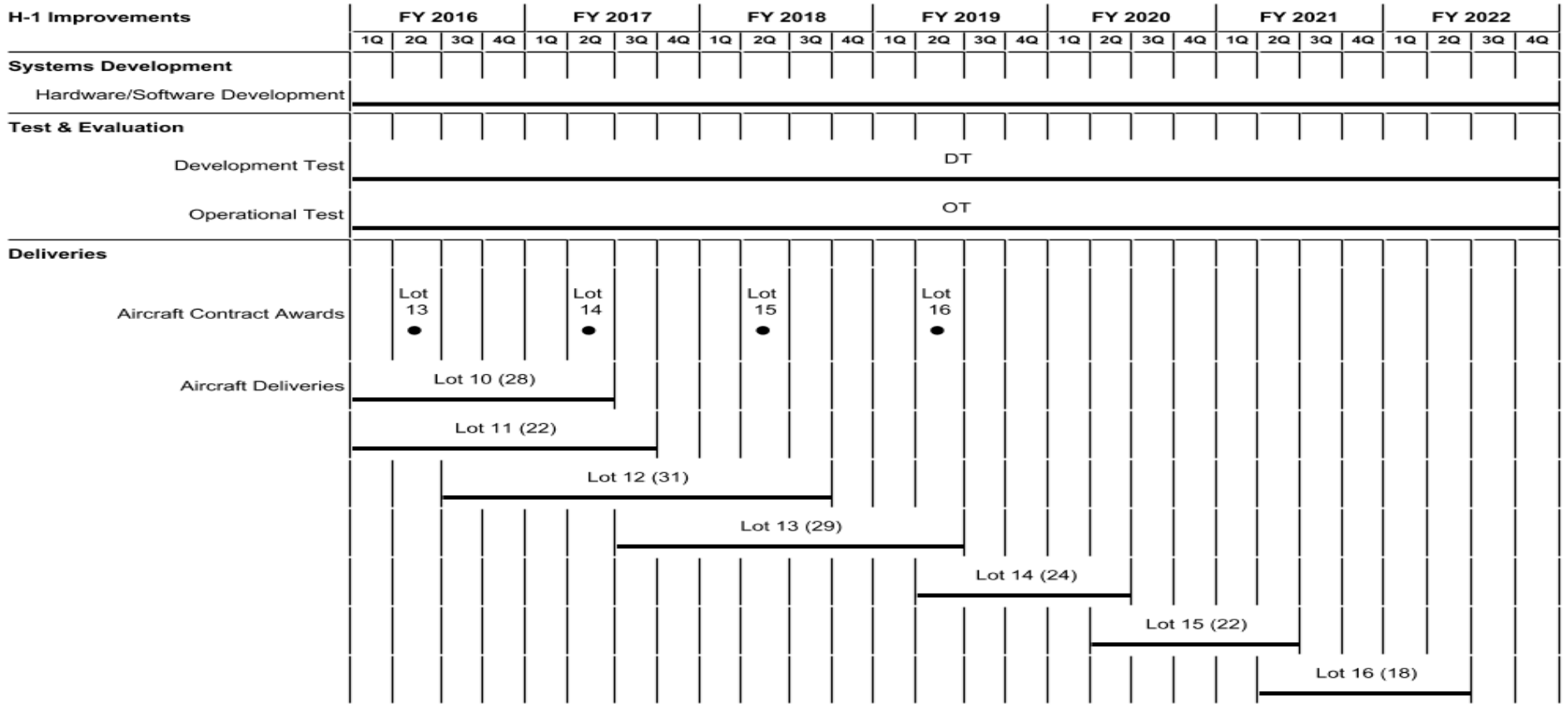
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	Various	Various : Various	0.640	0.326	Nov 2015	0.330	Nov 2016	0.334	Nov 2017	-		0.334	1.376	3.006	3.006
Program Management Support	Various	Various : Various	1.565	0.940	Nov 2015	0.687	Nov 2016	0.695	Nov 2017	-		0.695	2.860	6.747	-
Travel	WR	NAVAIR : Patuxent River, MD	0.409	0.235	Oct 2015	0.238	Oct 2016	0.240	Oct 2017	-		0.240	Continuing	Continuing	Continuing
		Subtotal	2.614	1.501		1.255		1.269		-		1.269	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	92.463	26.768		27.441		61.288		-		61.288	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604245N / *H-1 Upgrades*	**Project (Number/Name)** 3359 / *H-1 Improvements*



2018PB - 0604245N - 3359

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604245N / *H-1 Upgrades*	**Project (Number/Name)** 3359 / *H-1 Improvements*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
H-1 Improvements				
Systems Development: Hardware/Software Development: Schedule Detail	1	2016	4	2022
Test & Evaluation: Development Test: H-1 Improvements DT	1	2016	4	2022
Test & Evaluation: Operational Test: H-1 Improvements OT	1	2016	4	2022
Deliveries: Aircraft Contract Awards: Lot 13	2	2016	2	2016
Deliveries: Aircraft Contract Awards: Lot 14	2	2017	2	2017
Deliveries: Aircraft Contract Awards: Lot 15	2	2018	2	2018
Deliveries: Aircraft Contract Awards: Lot 16	2	2019	2	2019
Deliveries: Aircraft Deliveries: Lot 10 FRP Y + Z	1	2016	2	2017
Deliveries: Aircraft Deliveries: Lot 11 FRP Y + Z	1	2016	3	2017
Deliveries: Aircraft Deliveries: Lot 12 FRP Y + Z	3	2016	3	2018
Deliveries: Aircraft Deliveries: Lot 13 FRP Y + Z	3	2017	2	2019
Deliveries: Aircraft Deliveries: Lot 14 FRP Z	2	2019	2	2020
Deliveries: Aircraft Deliveries: Lot 15 FRP Z	2	2020	2	2021
Deliveries: Aircraft Deliveries: Lot 16 FRP Z	2	2021	2	2022

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604261N *I Acoustic Search Sensors*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	456.268	30.637	34.525	37.167	-	37.167	28.962	47.887	48.896	49.868	Continuing	Continuing
0480: *ASW Sensors & Proc*	351.709	22.053	29.967	33.423	-	33.423	25.012	43.856	44.783	45.672	Continuing	Continuing
3224: *High Altitude ASW*	104.559	8.584	4.558	3.744	-	3.744	3.950	4.031	4.113	4.196	Continuing	Continuing

A. Mission Description and Budget Item Justification

Includes RDT&E funds for engineering development and operational test and evaluation of acoustic search sensors/systems and complementary equipment for Anti-Submarine Warfare (ASW) aircraft.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	31.235	34.525	37.696	-	37.696
Current President's Budget	30.637	34.525	37.167	-	37.167
Total Adjustments	-0.598	0.000	-0.529	-	-0.529
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.033	0.000			
• SBIR/STTR Transfer	-0.565	0.000			
• Program Adjustments	0.000	0.000	-0.195	-	-0.195
• Rate/Misc Adjustments	0.000	0.000	-0.334	-	-0.334

Change Summary Explanation

Technical: Not applicable.

Schedule:

0480 Schedule 1. Received technical correction for MAC Enhancements (MAC-E) with funding in FY16-FY22. Updated schedule to better align with P-8A's new acquisition strategy.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604261N *I Acoustic Search Sensors*

0480 Schedule 2.

0480 Schedule 3.

3224 Schedule. The P-8A Initial Operational Capability (IOC) milestones were removed to better align with the P-8A schedule. Additionally, the integrated and operational test periods were further defined to reflect HAASW requirements integration into P-8A ECP 2, ECP 3, and INC 3 testing. The Radio Frequency Interference (RFI) Mitigation Analysis was added to the schedule based on the need to address emergent requirements in the sonobuoys. The digital telemetry contract award was then replaced with the planned P-8A integration and sonobuoy production contract awards. This aligns with the current acquisition strategy to add the digital telemetry requirement for the SSQ-125 sonobuoy into the FY19-23 production contract due to affordability.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604261N / *Acoustic Search Sensors*	Project (Number/Name) 0480 / *ASW Sensors & Proc*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0480: *ASW Sensors & Proc*	351.709	22.053	29.967	33.423	-	33.423	25.012	43.856	44.783	45.672	Continuing	Continuing
Quantity of RDT&E Articles		200	200	75	-	75	100	200	200	200		

A. Mission Description and Budget Item Justification

The Anti-Submarine Warfare (ASW) Sensors and Processing project provides the tools and methods necessary to maintain naval superiority by preventing threat submarines from disrupting the U.S. Navy's ability to control the sea lines of communication and completing their hostile missions. This project encompasses the Engineering & Manufacturing Development phase and the follow on Production and Deployment Phase of sensor systems to improve the mission effectiveness of airborne ASW platforms in cueing, searching, localizing, tracking, and attacking subsurface targets. Smaller and quieter threat submarines drive the requirement for continued advancement in ASW sensor capabilities for both blue water and littoral environments. The littoral regions of the world create an additional ASW challenge to overcome the increase in background clutter caused by the shallow water depth, high volume of shipping, and commercial radio frequency interference. Project 0480 provides funding to the passive and active ASW family of systems for the engineering development of solutions that detect, classify, and track threat submarines. The Multi-Static Active Coherent (MAC) program encompasses modifications to the active coherent (electronic) source sonobuoy and the Air Deployable Active Receiver sonobuoy and development, integration, and test of aircraft software. It also provides upgrades to the Multi-static mission planning tool, the tactical crew trainers and the tactical ground replay system. This program includes MAC Enhancements (MAC-E) that will shorten the ASW kill chain by enabling the warfighter to search larger areas in less time with more precision.

Project 0480 also provides funding for the Advanced Product Build (APB) program which integrates Office of Naval Research (ONR) Future Naval Capabilities (FNCs), Small Business Innovation Research (SBIR), University Affiliated Research Center (UARC) and other mature technologies into the processing baseline. Efforts incorporate clutter reduction, automation, improved displays and controls, as well as improved communication links resulting in reduced operator workload, increased target detection opportunities, and improved classification techniques. APB also includes an Air ASW Engineering Measurement Program (AEMP) that collects ASW operational system performance data and identifies areas where beneficial improvements can be incorporated across all Air ASW platforms. APB will deliver a new software build nominally in two year increments following MAC-E. The sonobuoy test articles in FY14-FY20 will support software and hardware integration flight tests and Technical Evaluation/Follow-On Test & Evaluation for the MAC program. Additionally, this project funds an urgent effort in support of the Navy's Theater Anti-Submarine Warfare offset strategy. Funding supports the rapid development, fielding and evaluation of a prototype distributed and netted undersea sensor system to meet an urgent combatant commanders' (U.S. European Command, U.S. Northern Command, U.S. Strategic Command) requirement for additional maritime Intelligence, Surveillance and Reconnaissance (ISR) capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: APB System Qualification Test/Fleet Release for P-3C. Rapid Capability Insertion (RCI)/Fleet Release for P-8A	8.053	6.317	11.423	0.000	11.423
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604261N / *Acoustic Search Sensors*	**Project (Number/Name)** 0480 / *ASW Sensors & Proc*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Performed software development/Engineering Measurement Program (EMP) for P-8A RCI (2). Continued system Fleet Introduction Training (FIT). ***FY 2017 Plans:*** Continue software development/EMP for P-8A RCI (2). Continue MAC FITs for P-8A squadrons. ***FY 2018 Base Plans:*** Continue software development/EMP for P-8A RCI (2). Continue MAC FITs for P-8A squadrons. ***FY 2018 OCO Plans:*** N/A					
Title: Multi-static Active Coherent (MAC) ***Articles:*** ***FY 2016 Accomplishments:*** Completed Hardware development for the SSQ-125A. Funding for MAC-E in FY15 and prior were executed under Program Element (PE) 0605500N. Continue MAC-E software development under PE 0604261N. ***FY 2017 Plans:*** Continue MAC-E software development. Deliver SSQ-125A EDM units. Conduct SSQ-125A test. ***FY 2018 Base Plans:*** Continue MAC-E software development. Deliver SSQ-125A EDM units. Conduct SSQ-125A test. ***FY 2018 OCO Plans:*** N/A	14.000 200	21.825 200	22.000 75	0.000 -	22.000 75
Title: Navy Theater ASW Offset Strategy ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Execute Theater ASW demonstration. Continue Advanced Theater ASW technology development. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:***	0.000 -	1.825 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604261N / *Acoustic Search Sensors*	**Project (Number/Name)** 0480 / *ASW Sensors & Proc*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Accomplishments/Planned Programs Subtotals	22.053	29.967	33.423	0.000	33.423

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/4048: *Sonobuoys - All Types*	0.000	25.787	38.775	-	38.775	43.653	44.444	53.523	49.648	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Multistatic Active Coherent (MAC) ASW system and associated sonobuoys are fully integrated on the P-3C and P-8A ASW platforms. MAC Enhancements (MAC-E) is a development program associated with P-8A increment 3 that will significantly increase the wide area search capability through Engineering Change Proposals (ECPs) to the sonobuoys, aircraft software modifications to reduce clutter and improve processing, and OMI improvements to reduce operator workload. S&T and early R&D ASW improvement programs are matured through the APB process for periodic Fleet software releases.

E. Performance Metrics

High level operational system requirements are documented in the MAC Capability Production Document (CPD). Cost, schedule, and performance metrics are tracked throughout the development phase of the program to ensure the operational requirements will be met or exceeded during an extensive DT/OT cycle.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604261N / *Acoustic Search Sensors*	Project (Number/Name) 0480 / *ASW Sensors & Proc*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Development	SS/CPIF	ERAPSCO : FT. WAYNE IN	18.805	0.000		3.003	Dec 2016	3.592	Dec 2017	-		3.592	17.500	42.900	42.900
Prior year Prod Dev no longer funded in the FYDP	Various	VARIOUS : VARIOUS	19.905	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	38.710	0.000		3.003		3.592		-		3.592	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	WR	NAWCAD : PATUXENT RIVER, MD	22.704	5.600	Dec 2015	5.436	Dec 2016	6.068	Dec 2017	-		6.068	Continuing	Continuing	Continuing
Software Development	SS/CPIF	LOCKHEED MARTIN : MANASSAS VA	9.329	1.000	Dec 2015	1.373	Dec 2016	1.870	Dec 2017	-		1.870	3.727	17.299	17.299
Software Development	Various	VARIOUS : VARIOUS	11.238	3.835	Dec 2015	6.869	Dec 2016	7.753	Dec 2017	-		7.753	Continuing	Continuing	Continuing
Studies & Analysis	WR	NAWCAD : PATUXENT RIVER, MD	15.602	2.652	Dec 2015	2.519	Dec 2016	2.807	Dec 2017	-		2.807	Continuing	Continuing	Continuing
Technical Data	WR	NAWCAD : PATUXENT RIVER, MD	15.659	0.372	Dec 2015	0.343	Dec 2016	0.337	Dec 2017	-		0.337	Continuing	Continuing	Continuing
Training	WR	NAWCAD : PATUXENT RIVER, MD	0.000	2.114	Dec 2015	2.095	Dec 2016	2.360	Dec 2017	-		2.360	Continuing	Continuing	Continuing
		Subtotal	74.532	15.573		18.635		21.195		-		21.195	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604261N / *Acoustic Search Sensors*	Project (Number/Name) 0480 / *ASW Sensors & Proc*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Eval	WR	NAWCAD : PATUXENT RIVER, MD	27.117	2.518	Dec 2015	3.291	Dec 2016	3.689	Dec 2017	-		3.689	Continuing	Continuing	Continuing
		Subtotal	27.117	2.518		3.291		3.689		-		3.689	-	-	-

Management Services ($ in Millions)

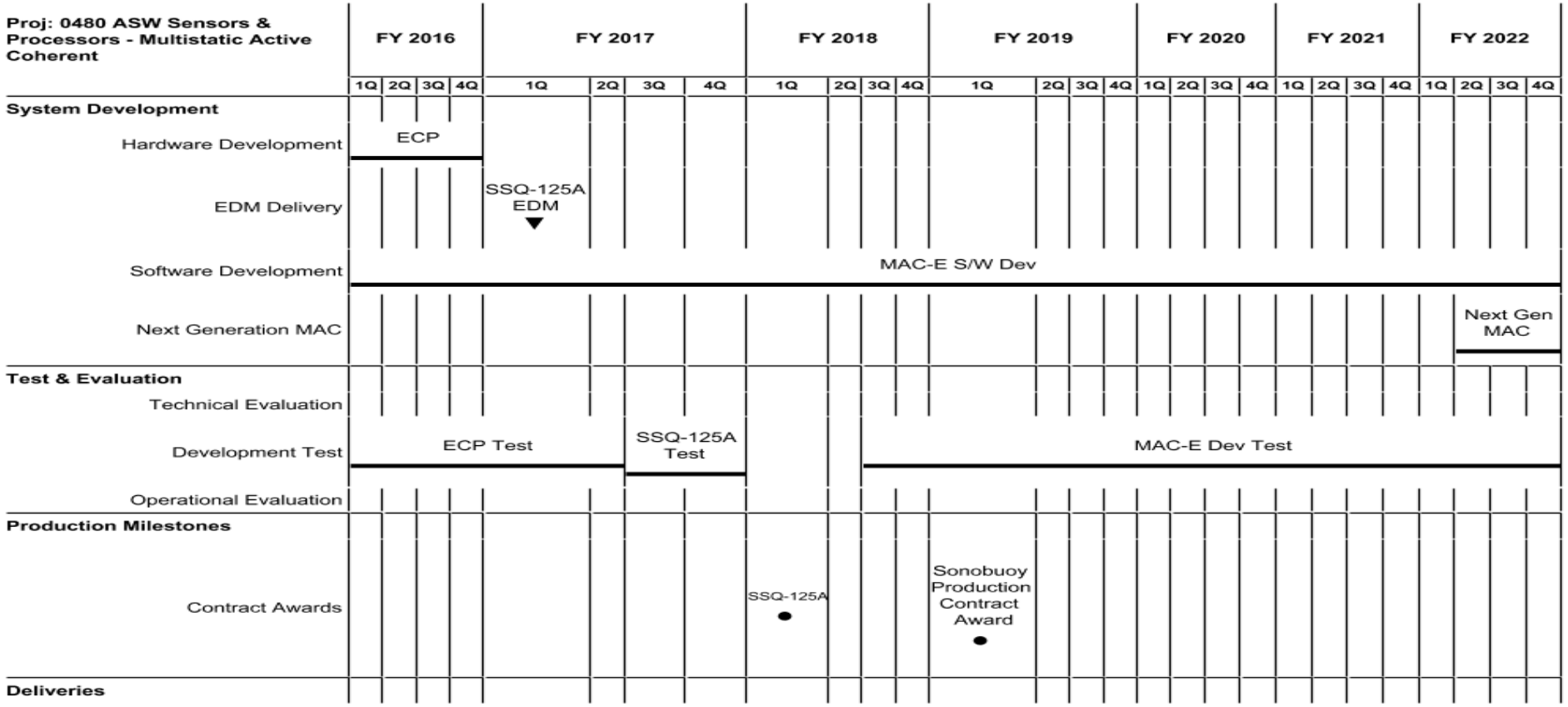
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Eng Spt	Various	VARIOUS : VARIOUS	40.969	1.630	Dec 2015	2.010	Dec 2016	2.050	Dec 2017	-		2.050	Continuing	Continuing	Continuing
Contractor Eng Spt	C/CPFF	NAVMAR APPLIED SCIENCES CORP : WARMINSTER, PA	6.049	0.500	Dec 2015	1.030	Dec 2016	1.011	Dec 2017	-		1.011	2.810	11.400	11.400
Government Eng Spt	WR	NAWCAD : PATUXENT RIVER, MD	97.260	0.722	Dec 2015	0.500	Dec 2016	0.386	Dec 2017	-		0.386	Continuing	Continuing	Continuing
Eng & Tech Spt Srvc (NON-FFRDC)	Various	VARIOUS : VARIOUS	56.186	1.110	Dec 2015	1.498	Dec 2016	1.500	Dec 2017	-		1.500	Continuing	Continuing	Continuing
Mgt & Prof SptT Srvc (FFRDC)	Various	VARIOUS : VARIOUS	10.018	0.000	Dec 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior Years Mgmt Svcs no longer funded in the FYDP	Various	VARIOUS : VARIOUS	0.868	0.000		0.000		0.000		-		0.000	0.000	0.868	-
		Subtotal	211.350	3.962		5.038		4.947		-		4.947	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	351.709	22.053		29.967		33.423		-		33.423	-	-	-

Remarks

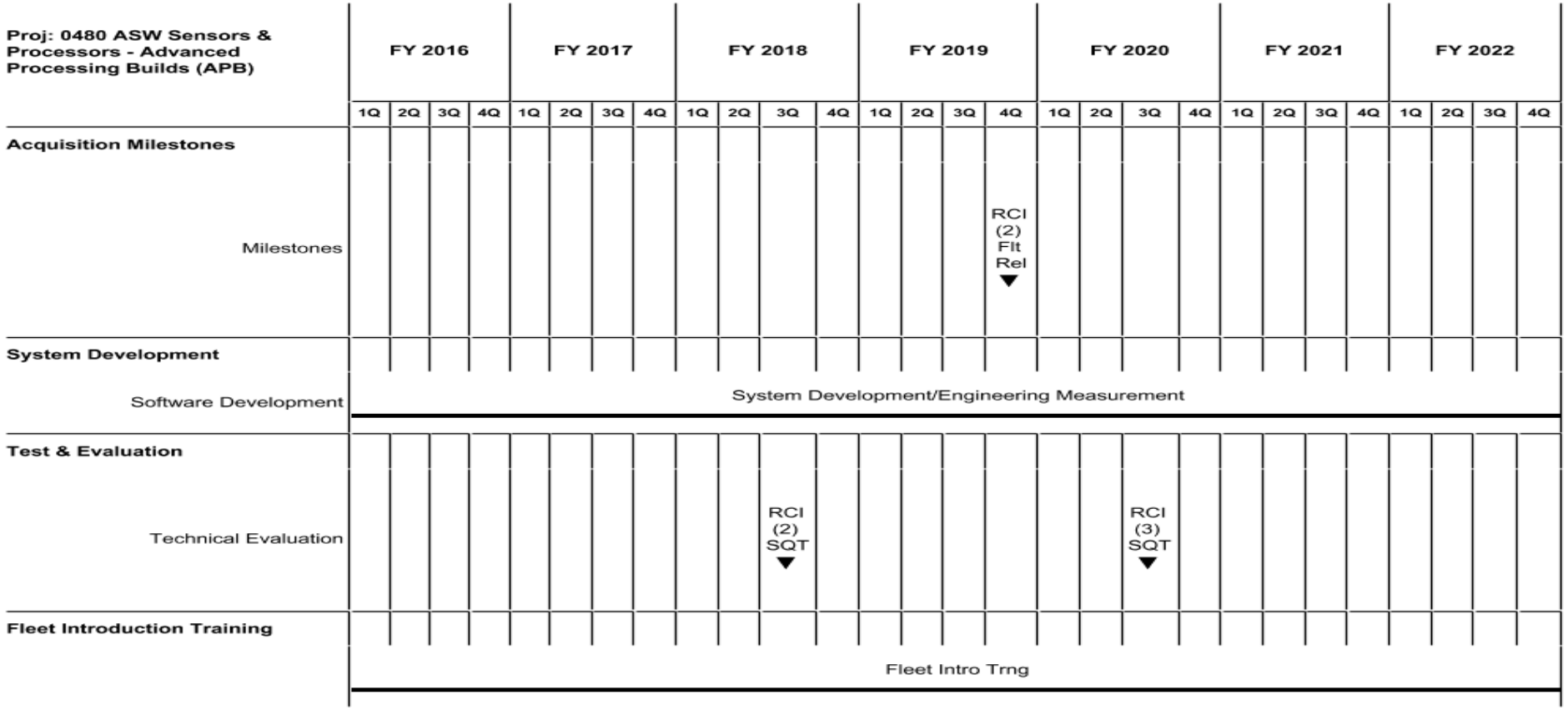
The support growth in FY16 results from the realignment, via technical correction, of $14.0 million Multistatic Active Coherent Enhancements (MAC-E) funding from Program Element (PE) 0605500N to PE 0604261N.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604261N / *Acoustic Search Sensors*	**Project (Number/Name)** 0480 / *ASW Sensors & Proc*



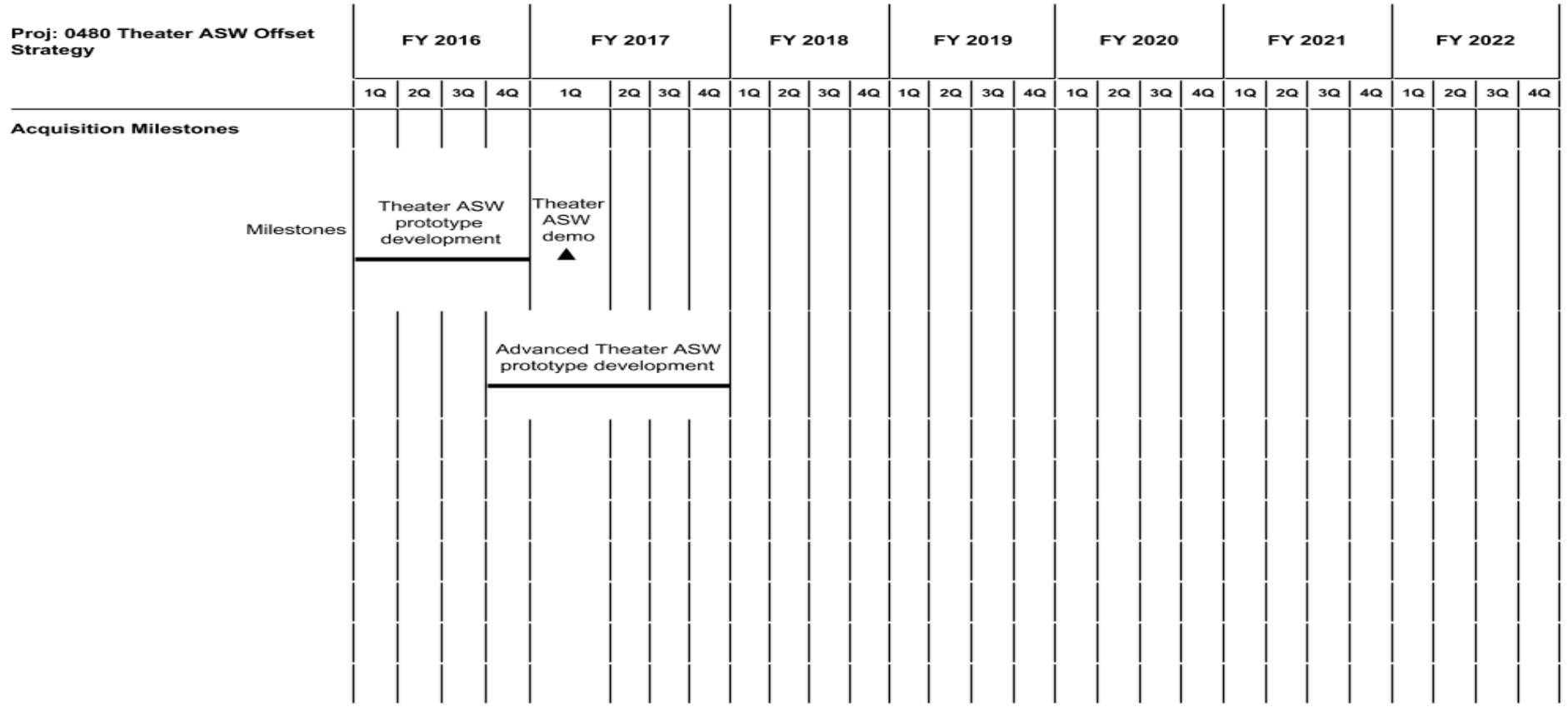
2018DON - 0604261N - 0480

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604261N / *Acoustic Search Sensors*	**Project (Number/Name)** 0480 / *ASW Sensors & Proc*



2018DON - 0604261N - 0480

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604261N / *Acoustic Search Sensors*	**Project (Number/Name)** 0480 / *ASW Sensors & Proc*



2018DON - 0604261N - 0480 FY16 efforts are dependent upon Omnibus Reprogramming action (FY 16-22 PA)

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604261N / *Acoustic Search Sensors*	**Project (Number/Name)** 0480 / *ASW Sensors & Proc*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj: 0480 ASW Sensors & Processors - Multistatic Active Coherent				
System Development: Hardware Development: Engineering Change Proposal	1	2016	4	2016
System Development: EDM Delivery: Eng Dev Model (H/W EDM) 2	1	2017	1	2017
System Development: Software Development: MAC-E Software Development	1	2016	4	2022
System Development: Next Generation MAC: Next Gen MAC	2	2022	4	2022
Test & Evaluation: Development Test: Engineering Change Proposal Test	1	2016	2	2017
Test & Evaluation: Development Test: SSQ-125A Test	3	2017	4	2017
Test & Evaluation: Development Test: MAC-E Development Test	3	2018	4	2022
Production Milestones: Contract Awards: SSQ-125A	1	2018	1	2018
Production Milestones: Contract Awards: Sonobuoy Production Contract Award	1	2019	1	2019
Proj: 0480 ASW Sensors & Processors - Advanced Processing Builds (APB)				
Acquisition Milestones: Milestones: RCI (2) Fleet Release	4	2019	4	2019
System Development: Software Development: System Development/Engineering Measurement	1	2016	4	2022
Test & Evaluation: Technical Evaluation: RCI (2) SQT	3	2018	3	2018
Test & Evaluation: Technical Evaluation: RCI (3) SQT	3	2020	3	2020
Fleet Introduction Training: Fleet Introduction Training	1	2016	4	2022
Proj: 0480 Theater ASW Offset Strategy				
Acquisition Milestones: Milestones: Theater ASW prototype development	1	2016	4	2016
Acquisition Milestones: Milestones: Theater ASW Demonstration	1	2017	1	2017
Acquisition Milestones: Milestones: Advanced Theater ASW prototype development	4	2016	4	2017

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604261N / *Acoustic Search Sensors*	Project (Number/Name) 3224 / *High Altitude ASW*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3224: *High Altitude ASW*	104.559	8.584	4.558	3.744	-	3.744	3.950	4.031	4.113	4.196	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The High Altitude Anti-Submarine Warfare (HAASW) program increases P-8A operational flexibility and effectiveness throughout the kill chain at higher than traditional ASW altitudes. FY10-FY16 activities included Sonobuoy Technology Development (TD), P-8A Aircraft integration, Training, Test & Evaluation, and Initial Operational Capability. TD includes hardware modifications to current production sonobuoys and software development for the aircraft. Global Positioning System (GPS) integration will provide precise sonobuoy location regardless of aircraft altitude/location to enhance wide area ASW search, localization, track and targeting. The digital telemetry will improve sonobuoy communication performance in high Radio Frequency Interference environments, increase Air Deployable Active Receiver (SSQ-101) channel availability, and provide NATO compatibility. FY16-FY18 activities include the integration of an algorithm that will adjust sonobuoy release/drop points for more accurate sonobuoy placement. FY16-FY22 activities include the integration of cyber security protections including, but not limited to, digital telemetry and encryption.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: High Altitude Enablers	8.584	4.558	3.744	0.000	3.744
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Initiated P-8A Inc 2 ECP 2 Follow-On Operational Test & Evaluation (FOT&E) and ECP 3 Integrated Test & Evaluation (IT&E). Initiated digital telemetry/cyber security requirements analysis.					
FY 2017 Plans: Continue P-8A Inc 2 ECP 2 FOT&E and initiate ECP 3 FOT&E. Continue digital telemetry/cyber security requirements analysis.					
FY 2018 Base Plans: Continue ECP 3 FOT&E. Continue digital telemetry/cyber security requirements analysis. Initiate digital telemetry integration.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	8.584	4.558	3.744	0.000	3.744

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604261N / *Acoustic Search Sensors*	**Project (Number/Name)** 3224 / *High Altitude ASW*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/4048: *Sonobuoys - All Types*	166.385	162.588	173.616	-	173.616	184.299	190.706	195.316	198.918	Continuing	Continuing

Remarks

D. Acquisition Strategy

A 15 March 12 Acquisition Decision Memorandum (ADM) from PEO(A) (Milestone Decision Authority) approved the transition from a planned Acquisition Category (ACAT) Program to a series of Engineering Change Proposal (ECP) modifications to the AN/SSQ-53, AN/SSQ-62 and AN/SSQ-101 sonobuoys. Affordability deferred the digital telemetry requirement in the SSQ-53, SSQ-62 and SSQ-125 sonobuoys to FY16-FY22. All major contracts (ERAPSCO & Boeing) to meet P-8A Inc 2 ECP 2 and ECP 3 requirements have been awarded. Integrate cyber security protections including, but not limited to, digital telemetry and encryption.

E. Performance Metrics

Schedule and cost variances are used to track sonobuoy development. Should Cost methodology has also been employed to manage the development and production costs of the HAASW capable sonobuoys.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604262N / *V-22A*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	9,127.759	74.366	189.423	171.386	-	171.386	137.814	167.426	94.955	119.109	184.398	10,266.636
1425: *V-22*	9,127.759	74.366	189.423	171.386	-	171.386	137.814	167.426	94.955	119.109	184.398	10,266.636
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 212												

A. Mission Description and Budget Item Justification

The V-22 Osprey is an Acquisition Category IC Joint Program led by the Department of the Navy for the purpose of developing, testing, evaluating, procuring and fielding a tilt rotor, vertical takeoff and landing aircraft for Joint Service application. The V-22 program is designed to provide an aircraft to meet the amphibious/ vertical assault needs of the Marine Corps, the Carrier Onboard Delivery needs of the Navy, and the special operations needs of the Air Force and the United States Special Operations Command (USSOCOM). The MV-22 variant is replacing the CH-46E and CH53A/D in the Marine Corps and the CMV-22 will replace the C-2A in the Navy. The CV-22 variant replaced the MH-53J and MH-53M and augments the C-130 in the Air Force and USSOCOM. The V-22 is capable of flying over 2,100 nautical miles, with a single refueling, giving the services the advantage of a Vertical/Short Take-off and Landing aircraft that can rapidly self-deploy to any location in the world. This program is funded under Engineering Manufacturing and Development for correction of deficiencies and includes Block A and Block B upgrades which encompassed engineering and manufacturing development of new end-items prior to the production incorporation decision as well as Block C suitability and effectiveness development upgrades. Capability Development Document interoperability requirements were addressed through a spiral upgrade acquisition strategy. It was the first spiral providing Key Enabling Department of Defense mandated open systems architecture upgrades for the mission computer hardware and software while simultaneously addressing required interoperability common avionics upgrades and current avionics obsolescence issues. Future development efforts will include Pre-Planned-Product-Improvements in the Capability Development Document and Re-design efforts to correct critical Reliability, Maintainability and Availability issues in support of readiness Operational Safety Improvement Program as prioritized by the United States Marine Corps or an Urgent Universal Needs Statement. Development efforts include Mission System Upgrade, Electrical System Upgrades, Infrared Suppressor, Engine Air Particle Separator, Swashplate Actuator, Mid-Wing Process Unit, ARC 210 Series Radio, Mission Computer Obsolescence Initiative, Weapon Systems Development, AAR-47 Hostile Fire Indicator, Time on Wing, Digital Interoperability, Blue Force Tracker/Netted Weather and Common Configuration Readiness and Modernization (CC-RAM) Nacelle redesign.

FY18 will provide for additional Aircraft Mission Maneuvering Envelope Expansion, Velocity Not to Exceed Expansion, Digital Interoperability, Software Reprogrammable Payload, Time on Wing and Reliability Improvement efforts such as Improved Inlet Solution (IIS) development as well as development and testing of Additive Manufacturing processes for selected MV-22 components.

The MV-22 Hardware Development Airframe continues to fund development efforts by Bell-Boeing. Continue development in support of MV-22 Block upgrades and Time on Wing and efforts such as IIS. Continue engineering, logistics, flight test, flight test support and address the correction of deficiencies and obsolescence. Continue MV-22 software development/mission computer obsolescence initiatives such as transition tech demo and map replacement demo. Continue V-22 Integrated Aircraft Survivability Equipment to include correcting deficiencies of the current swashplate actuator, EAPS, radar warning system, integration with an upgraded missile warning and active infrared countermeasure system, and providing integrated threat warning information on the aircraft main flight displays.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*

MV-22 Hardware Development Propulsion will continue to fund the flight/engine hours necessary for developmental testing at the Patuxent River squadron. Rolls-Royce will continue to provide engine support and development of MV-22 flight testing.

FY18 continues MV-22 Digital Interoperability (DI), United States Marine Corps Aviation wide implementation of software defined radios, such as Software Reprogrammable Payload, capable of migration to advanced waveforms and payloads, providing enhanced digital connectivity between forces using dissimilar waveforms and/or protocols. DI will enable fleet integration of new capability through the use of tablets with custom applications. DI is also envisioned to include logistics tracking (cargo and personnel) with the use of Radio Frequency Identification technology, advanced Electronic Warfare/Cyber capability, and threat data capturing/off-boarding.

FY18 continues MV-22 Software Reprogrammable Payload is a single common payload module that is open architecture, government owned, flexible, and reconfigurable to support simultaneous missions and applications making maximum use of available bandwidth and ensuring interoperability. Provides a bridge and translator to allow various systems/waveforms to collaborate and provides the V-22 operator and passenger with a common operating picture. MV-22 is the lead platform for integration of Software Reprogrammable Payload Spiral II.

FY18 continues effort started under PE: 0605525N. The Navy Variant (CMV) Hardware Development effort consists of an Engineering Change Proposal (ECP) to modify MV-22 into the CMV configuration to perform the Carrier Onboard Delivery (COD) mission. The ECP will add such things as (1) the capability to meet the range requirements that the COD mission demands (2) a high frequency radio to transmit/receive beyond line of sight over water and (3) a public address system for use while transporting passengers.

FY18 continues the V-22 Aerial Refueling System (VARS) capability. VARS will provide V-22 tanker capability to the Marine Air Ground Task Force, enabling safe and efficient execution of all missions, tactical or humanitarian. The system will allow the V-22 to provide fuel to other Air Combat Element aircraft, such as F-35B and CH-53E/K, while en-route, in the objective area, or during recovery, extending the operational reach/duration. With the V-22 deployed onboard, amphibious assault ships would gain an organic aerial refueling capability, maximizing response time and agility.

FY18 continues Electrical System re-design and reliability improvement effort started in the Hardware Development Airframe line. This effort will assess and select engineering solutions to improve the Variable Frequency Generator and Generator Control Unit components. Increased V-22 electrical system reliability and capacity is required to accommodate demands on electrical power system as additional systems are added to the V-22. Continue Nacelle redesign efforts that will improve maintainability and reliability, as well as wiring redesign.

FY18 continues Infrared Suppressor (IRS) Re-design effort started in the Hardware Development Airframe line. The IRS system masks the infrared signature of an aircraft, which increases the survivability. The current system does not meet reliability requirements and is a high readiness degrader for the V-22 fleet. This effort funds the Engineering & Manufacturing Development, as well as the instrumented flight test of a more reliable V-22 IRS upgrade.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*

FY18 continues MV-22 Technology Insertion development effort started in the Hardware Development Airframe line. This effort provides new capabilities focused on enhancing survivability; software and hardware modularity and maturation of aircraft interfaces to support interoperability. Also includes risk reduction and development efforts such as Multi-Spectral Sensor Integration (Improved Forward Looking Infrared, Degraded Visual Environment Mitigation, Electronic Warfare), Helmet Mounted Display, Modular Avionics/Cyber Security Implementation, Enhanced Defensive Weapons Capabilities, Radio Frequency Threat Protection and Airborne Networking.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	76.483	174.423	145.342	-	145.342
Current President's Budget	74.366	189.423	171.386	-	171.386
Total Adjustments	-2.117	15.000	26.044	-	26.044
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.002	0.000			
• SBIR/STTR Transfer	-2.114	0.000			
• Program Adjustments	0.000	15.000	25.850	-	25.850
• Rate/Misc Adjustments	-0.001	0.000	0.194	-	0.194

Change Summary Explanation

The FY18 funding request shows Infrared Suppressor and Technology Insertion cost elements broken out of the Hardware Development Airframe line.

Production Quantity change now reflects 6 aircraft in FY18, 7 in FY19 and FY20, 9 in FY21, and 11 in FY22. Development Test and Evaluation (DT&E) was updated to adjust for actuals. Added depth and detail to Digital Interoperability/Software Reprogrammable Payload and Electrical System Re-design schedules. New schedules added for Infrared Suppressor and Technology Insertion cost elements. The schedule for the V-22 Aerial Refueling system (VARS) has been updated to reflect contract award, contractor schedule, and design maturation as the program progresses to Preliminary Design Review in FY17. VARS kits and installs will now complete in FY22.

Technical: Not applicable

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604262N / *V-22A*				Project (Number/Name) 1425 / *V-22*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
1425: *V-22*	9,127.759	74.366	189.423	171.386	-	171.386	137.814	167.426	94.955	119.109	184.398	10,266.636
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 212

A. Mission Description and Budget Item Justification

The V-22 Osprey is an Acquisition Category IC Joint Program led by the Department of the Navy for the purpose of developing, testing, evaluating, procuring and fielding a tilt rotor, vertical takeoff and landing aircraft for Joint Service application. The V-22 program is designed to provide an aircraft to meet the amphibious/vertical assault needs of the Marine Corps, the Carrier Onboard Delivery needs of the Navy, and the special operations needs of the Air Force and the United States Special Operations Command (USSOCOM). The V-22 is replacing the CH-46E and CH53A/D in the Marine Corps with the MV-22; will supplement the H-60 in the Navy with the MV-22; and replace the MH-53J and MH-53M as well as augment the C-130 in the Air Force and USSOCOM with the CV-22. The V-22 is capable of flying over 2,100 nautical miles, with a single refueling, giving the services the advantage of a Vertical/Short Take-off and Landing aircraft that can rapidly self-deploy to any location in the world. This program is funded under Engineering Manufacturing and Development for correction of deficiencies and includes Block A and Block B upgrades which encompassed engineering and manufacturing development of new end-items prior to the production incorporation decision as well as Block C suitability and effectiveness development upgrades. Capability Development Document interoperability requirements were addressed through a spiral upgrade acquisition strategy. It was the first spiral providing Key Enabling Department of Defense mandated open systems architecture upgrades for the mission computer hardware and software while simultaneously addressing required interoperability common avionics upgrades and current avionics obsolescence issues. Future development efforts will include Pre-Planned-Product-Improvements in the Capability Development Document and Re-design efforts to correct critical Reliability, Maintainability and Availability issues in support of readiness Operational Safety Improvement Program as prioritized by the United States Marine Corps or a Urgent Universal Needs Statement. Development efforts include Mission System Upgrade, Electrical System Upgrades, Infrared Suppressor, Engine Air Particle Separator, Swashplate Actuator, Mid-Wing Process Unit, ARC 210 Series Radio, Mission Computer Obsolescence Initiative, Weapon Systems Development, AAR-47 Hostile Fire Indicator, Time on Wing, Digital Interoperability, Blue Force Tracker/Netted Weather and Common Configuration Readiness and Modernization (CC-RAM) Nacelle redesign.

FY18 will provide for additional Aircraft Mission Maneuvering Envelope Expansion, Velocity Not to Exceed Expansion, Digital Interoperability, Software Reprogrammable Payload, Time on Wing and Reliability Improvement efforts such as Improved Inlet Solution (IIS) development as well as development and testing of Additive Manufacturing processes for selected MV-22 components.

The MV-22 Hardware Development Airframe continues to fund development efforts by Bell-Boeing. Continue development in support of MV-22 Block upgrades and Time on Wing and efforts such as IIS. Continue engineering, logistics, flight test, flight test support and address the correction of deficiencies and obsolescence. Continue MV-22 software development/mission computer obsolescence initiatives such as transition tech demo and map replacement demo. Continue V-22 Integrated Aircraft Survivability Equipment to include correcting deficiencies of the current swashplate actuator, EAPS, radar warning system, integration with an upgraded missile warning and active infrared countermeasure system, and providing integrated threat warning information on the aircraft main flight displays.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

MV-22 Hardware Development Propulsion will continue to fund the flight/engine hours necessary for developmental testing at the Patuxent River squadron. Rolls-Royce will continue to provide engine support and development of MV-22 flight testing.

FY18 continues MV-22 Digital Interoperability (DI), United States Marine Corps Aviation wide implementation of software defined radios, such as Software Reprogrammable Payload, capable of migration to advanced waveforms and payloads, providing enhanced digital connectivity between forces using dissimilar waveforms and/or protocols. DI will enable fleet integration of new capability through the use of tablets with custom applications. DI is also envisioned to include logistics tracking (cargo and personnel) with the use of Radio Frequency Identification technology, advanced Electronic Warfare/Cyber capability, and threat data capturing/off-boarding.

FY18 continues MV-22 Software Reprogrammable Payload is a single common payload module that is open architecture, government owned, flexible, and reconfigurable to support simultaneous missions and applications making maximum use of available bandwidth and ensuring interoperability. Provides a bridge and translator to allow various systems/waveforms to collaborate and provides the V-22 operator and passenger with a common operating picture. MV-22 is the lead platform for integration of Software Reprogrammable Payload Spiral II.

FY18 continues effort started under PE: 0605525N. The CMV Hardware Development effort consists of an Engineering Change Proposal (ECP) to modify MV-22 into the CMV configuration to perform the Carrier Onboard Delivery (COD) mission. The ECP will add such things as (1) the capability to meet the range requirements that the COD mission demands (2) a high frequency radio to transmit/receive beyond line of sight over water and (3) a public address system for use while transporting passengers.

FY18 continues the V-22 Aerial Refueling System (VARS) capability. VARS will provide V-22 tanker capability to the Marine Air Ground Task Force, enabling safe and efficient execution of all missions, tactical or humanitarian. The system will allow the V-22 to provide fuel to other Air Combat Element aircraft, such as F-35B and CH-53E/K, while en-route, in the objective area, or during recovery, extending the operational reach/duration. With the V-22 deployed onboard, amphibious assault ships would gain an organic aerial refueling capability, maximizing response time and agility.

FY18 continues Electrical System re-design and reliability improvement effort started in the Hardware Development Airframe line. This effort will assess and select engineering solutions to improve the Variable Frequency Generator and Generator Control Unit components. Increased V-22 electrical system reliability and capacity is required to accommodate demands on electrical power system as additional systems are added to the V-22. Continue Nacelle redesign efforts that will improve maintainability and reliability, as well as wiring redesign.

FY18 continues Infrared Suppressor (IRS) Re-design effort started in the Hardware Development Airframe line. The IRS system masks the infrared signature of an aircraft, which increases the survivability. The current system does not meet reliability requirements and is a high readiness degrader for the V-22 fleet. This effort funds the Engineering & Manufacturing Development, as well as the instrumented flight test of a more reliable V-22 IRS upgrade.

FY18 continues MV-22 Technology Insertion development effort started in the Hardware Development Airframe line. This effort provides new capabilities focused on enhancing survivability; software and hardware modularity and maturation of aircraft interfaces to support interoperability. Also includes risk reduction and development

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

efforts such as Multi-Spectral Sensor Integration (Improved Forward Looking Infrared, Degraded Visual Environment Mitigation, Electronic Warfare), Helmet Mounted Display, Modular Avionics/Cyber Security Implementation, Enhanced Defensive Weapons Capabilities, Radio Frequency Threat Protection and Airborne Networking.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: MV-22 Hardware Development Airframe	13.714	21.768	16.827	0.000	16.827
Articles:	-	-	-	-	-

Description: The MV-22 Hardware Development Airframe continues to fund development efforts by Bell-Boeing. Continue development in support of MV-22 Block upgrades and Time on Wing/Reliability Improvements efforts such as Improved Inlet Solution (IIS), Condition Based Maintenance development, development and testing of Additive Manufacturing processes for selected MV-22 components, Miniaturized Airborne Global Positioning and electrical system capacity efforts. Continue engineering, logistics, flight test, flight test support and address the correction of deficiencies and obsolescence efforts such as Swashplate Actuator, Engine Air Particle Separator, including training upgrades and developments. Continue MV-22 software development/sustainment efforts such as transition tech demo, map replacement demo and Mission Computer Obsolescence Initiative re-design. Continue V-22 Integrated Aircraft Survivability Equipment to include correcting deficiencies and obsolescence issues, to include the current radar warning system, integration with an upgraded missile warning and active infrared countermeasure system, cockpit interface units, electrical power system, and providing integrated threat warning information on the aircraft main flight displays.

FY 2016 Accomplishments:
Continue MV-22 development efforts by Bell-Boeing. Rolls-Royce will continue to provide engine support and development of MV-22 flight testing. Continue MV-22 software development/sustainment efforts. Continue development in support of MV-22 Block upgrades and Time on Wing efforts such as IIS & Condition Based Maintenance Plus (CBM+) development. Continue engineering, logistics, flight test, flight test support and address correction of deficiencies. Continue contracted development efforts on test aircraft. Continue electrical system capacity and reliability improvement efforts.

FY 2017 Plans:
Continue MV-22 development efforts by Bell-Boeing. Rolls-Royce will continue to provide engine support and development of MV-22 flight testing. Continue MV-22 software development/sustainment efforts such as Mission Computer Obsolescence Initiative re-design and modular software. Continue development in support of MV-22 Block upgrades and Time on Wing/Reliability Improvement efforts such as IIS and CBM+. Continue

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
V-22 Integrated Aircraft Survivability Equipment effort. Continue engineering, logistics, flight test, flight test support and address correction of deficiencies and obsolescence efforts such as Swashplate Actuator, Engine Air Particle Separator, also including training upgrades and developments. Continue reliability improvement efforts such as Additive manufacturing, and Miniaturized Airborne Global Positioning as well as Re-design efforts to correct critical Reliability, Maintainability and Availability issues in support of readiness Operational Safety Improvement Program. ***FY 2018 Base Plans:*** Continue MV-22 development efforts by Bell-Boeing. Rolls-Royce will continue to provide engine support and development of MV-22 flight testing. Continue MV-22 software development/sustainment efforts such as Mission Computer Obsolescence Initiative re-design. Continue development in support of MV-22 Block upgrades and Time on Wing/Reliability Improvement efforts such as Improved Inlet Solution. Continue engineering, logistics, flight test, flight test support and address correction of deficiencies and obsolescence efforts such as Swashplate Actuator, Engine Air Particle Separator, also including training upgrades and developments. Continue reliability improvement efforts such as Additive manufacturing, and Miniaturized Airborne Global Positioning as well as Re-design efforts to correct critical Reliability, Maintainability and Availability issues in support of readiness Operational Safety Improvement Program. ***FY 2018 OCO Plans:*** N/A					
Title: MV-22 Hardware Development Propulsion/Mission Care	0.086	0.162	0.167	0.000	0.167
Articles:	-	-	-	-	-
Description: The funding of Mission Care relates to our RDT&E program as it funds the flight/engine hours necessary for developmental testing at the Patuxent River squadron. In addition, it pays for Rolls Royce engine support at Patuxent River. ***FY 2016 Accomplishments:*** Funds continued for Mission Care flight & engine hours for developmental testing at Patuxent River squadron. ***FY 2017 Plans:*** Funds continued for Mission Care flight & engine hours for developmental testing at Patuxent River squadron. ***FY 2018 Base Plans:*** Funds continued for Mission Care flight & engine hours for developmental testing at Patuxent River squadron. ***FY 2018 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: MV-22 Digital Interoperability	4.503	9.900	12.200	0.000	12.200
Articles:	-	-	-	-	-
Description: Digital Interoperability (DI) is the United States Marine Corps Aviation wide implementation of iridium and software defined radios, such as Software Reprogrammable Payload, capable of migration to advanced waveforms and payloads, providing enhanced digital connectivity between forces using dissimilar waveforms and/or protocols. DI will enable fleet integration of new capability through the use of tablets with custom applications. DI is also envisioned to include logistics tracking (cargo and personnel) with the use of Radio Frequency Identification technology, advanced Electronic Warfare/Cyber capability, and threat data capturing/off-boarding.					
FY 2016 Accomplishments: Funds continue for development and demonstration of Digital Interoperability, including spiral development of Software Reprogrammable Payload (SRP), tablets and the custom applications. Approved Interim Airframes Change for Iridium & started initial install.					
FY 2017 Plans: Funds continue for development and demonstration of Digital Interoperability, by incorporating lessons learned into the SRP, using additional dissimilar waveforms and Protocols, tablets and the custom applications, Radio Frequency Identification technology, Electronic Warfare/Cyber capability and threat data capturing/off-boarding. Formalize iridium via and engineering change proposal to include incorporation the design into production drawings.					
FY 2018 Base Plans: Funds continue for the maturation of Digital Interoperability and assessment of effectiveness via gateway messaging, data flow, data assurance, and quality of service to support the Information Exchange Requirements to support the approved Integrated Aviation Survivability Equipment information systems Initial Capability Document, distributed electronic warfare operations, data fusion, off-boarding, and mission thread Information exchange Requirements across the range of military operations.					
FY 2018 OCO Plans: N/A					
Title: MV-22 Software Reprogrammable Payload (SRP)	5.200	6.000	6.000	0.000	6.000
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: SRP is a single common payload module that is open architecture, government owned, flexible, and reconfigurable to support simultaneous missions and applications making maximum use of available bandwidth and ensuring interoperability. Provides a bridge and translator to allow various systems/waveforms to collaborate and provides the V-22 operator and passenger with a common operating picture. ***FY 2016 Accomplishments:*** Development begins for the SRP with the development of a conformal antenna and incorporation of Spiral II waveforms (Link 16, Bandwidth Efficient Common Data Link, Tactical Targeting Network Technology and associated hardware into the SRP radio. ***FY 2017 Plans:*** Funding continues for Software Reprogrammable Payload (SRP) Development to provide provisions for the porting of the waveforms to Software Reprogrammable Payload essential to meet USMC mission thread requirements; includes Software Integration Labs, MV-22 integration, test and development assets, provides for data forwarding, messaging, and health of services capability to achieve interoperability with existing networks and systems. ***FY 2018 Base Plans:*** Funding continues for SRP gateway development to provide for Digital Interoperability via Sensor Fusion and Integrated Aircraft Survivability Equipment. Continuation of waveform development of Spiral II waveforms (Link 16, Bandwidth Efficient Common Data Link, Tactical Targeting Network Technology and associated hardware into the SRP radio. ***FY 2018 OCO Plans:*** N/A					
Title: V-22 Aerial Refueling System Development	10.800	24.752	17.323	0.000	17.323
Articles:	-	-	-	-	-
Description: V-22 Aerial Refueling System (VARS) will provide V-22 tanker capability to the Marine Air Ground Task Force, enabling safe and efficient execution of all missions, tactical or humanitarian. The system will allow the V-22 to provide fuel to other Air Combat Element aircraft, such as F-35B and CH-53E/K, while en-route, in the objective area, or during recovery, extending the operational reach/duration. With the V-22 deployed onboard, amphibious assault ships would gain an organic aerial refueling capability, maximizing response time and agility.					
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Begin funding the VARS Development Capability. VARS will provide V-22 tanker capability to the Marine Air Ground Task Force, enabling safe and efficient execution of all missions, tactical or humanitarian. This FY16 funding will complete the initial design and allow the effort to proceed through Critical Design Review (CDR). ***FY 2017 Plans:*** Continue funding for the VARS Development Capability. VARS will provide V-22 tanker capability to the Marine Air Ground Task Force, enabling safe and efficient execution of all missions, tactical or humanitarian. This FY17 funding will provide engineering to complete the basic (post-CDR) design for testing as well as upgrading Joint Mission Planning System software, and the procurement of flight test kits and flight test support. ***FY 2018 Base Plans:*** Continue funding for the VARS Development Capability. VARS will provide V-22 tanker capability to the Marine Air Ground Task Force, enabling safe and efficient execution of all missions, tactical or humanitarian. The FY18 funding will be used to continue flight testing and supply engineering support for any issues identified during flight test as well as the procurement of additional flight test kits. ***FY 2018 OCO Plans:*** N/A					
Title: MV-22 Electrical System Re-design ***Articles:*** ***Description:*** Continue Electrical System re-design and reliability improvement effort started in the Hardware Development Airframe line. This effort will assess and select engineering solutions to improve the Variable Frequency Generator (VFG), Generator Control Unit (GCU) and Constant Frequency Generator (CFG) components as well as support relocation of the GCU. Upgrading the increased V-22 electrical system reliability and capacity is required to accommodate demands on electrical power system as additional systems are added to the V-22. Continue Nacelle redesign efforts that will improve maintainability and reliability, as well as wiring redesign. This will reduce wire harnesses, connectors, wiring assemblies and will incorporate water intrusion and corrosion protection. Nacelle redesign will also accommodate Inlet Solution wiring and remote VFG/GCU provisions. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:***	0.000 -	20.200 -	8.200 -	0.000 -	8.200 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue Electrical System re-design and reliability improvement effort begun under the hardware development line. This effort will assess and select engineering solutions to improve the VFG and GCU components. Increased V-22 electrical system reliability and capacity is required to accommodate demands on electrical power system as additional systems are added to the V-22. Nacelle redesign will also accommodate Inlet Solution wiring and remote VFG/GCU provisions. ***FY 2018 Base Plans:*** Continue Electrical System re-design and reliability improvement effort started in the hardware development line. This effort is a two phase approach; first phase will redesign and separate the GCUs (both VFG and CFG) from the generators and relocate them to a more benign environment (such as the fuselage); second phase will redesign Variable Frequency Generator (VFG) and Generator Control Unit (GCU) to one common configuration increasing power generation capacity required to accommodate demands on electrical power system as additional systems are added to the V-22. Continue Nacelle redesign efforts that will improve maintainability and reliability, as well as wiring redesign. ***FY 2018 OCO Plans:*** N/A					
Title: V-22 CMV Development	16.084	71.563	65.185	0.000	65.185
Articles:	-	1	-	-	-
Description: Funding supports the implementation of an Engineering Change Proposal (ECP) to incorporate the new systems required for the CMV configuration to perform the Carrier Onboard Delivery (COD) mission. The ECP will add (1) the capability to meet the range requirements that the COD mission demands (2) a High Frequency radio to transmit/receive beyond line of sight over water and (3) a Public Address system for use while transporting passengers. ***FY 2016 Accomplishments:*** Funds provided for the V-22 CMV Development effort to perform the COD mission. Begin development of ECP to meet External Fuel Tank, High Frequency radio and Public Address system requirements. Begin engineering and logistics support needed to develop ECP. Develop full System Engineering Development Model (EDM). ***FY 2017 Plans:*** Continue funding for the V-22 CMV Development effort to perform the COD mission. Continue development of ECP to meet Extended Range, High Frequency radio and Public Address system requirements. Continue					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
engineering and logistics support needed to develop ECP. Build and install EDM prototype ECP kit on V-22 developmental test aircraft. ***FY 2018 Base Plans:*** Continue funding for the V-22 CMV Development effort to perform the COD mission. Support the development of Functional Test Plans and qualification efforts for the High Frequency radio to transmit/receive beyond line of sight over water and the Public Address system for use while transporting passengers. Development of the Joint Vertical Experimental Application System Software will continue. Begin tooling design and fabrication for the enlarged sponsons and wing tanks and the completion of the live fire test sponson fabrication will occur. Begin risk reduction flight testing and develop the logistics products. Begin the test Instrumentation design and planning for the CMV aircraft. ***FY 2018 OCO Plans:*** N/A					
Title: V-22 Infrared Suppressor (IRS) Re-design	0.960	8.694	10.578	0.000	10.578
Articles:	-	-	-	-	-
Description: Funding supports the development of a new or improved IRS system for the MV-22. The IRS system masks the infrared signature of an aircraft which increases the survivability. The current system does not meet reliability requirements and is a high readiness degrader for the V-22 fleet. This funding will provide for Engineering & Manufacturing Development and instrumented flight test of a more reliable V-22 IRS upgrade. ***FY 2016 Accomplishments:*** Funding provided for Broad Agency Announcement soliciting technology solutions from industry for a new or improved IRS system to support improved reliability & readiness for the MV-22 aircraft. ***FY 2017 Plans:*** Funding includes the evaluation of three prototype solutions for a new or improved V-22 Infrared Suppressor (IRS) system. Each prototype solution will be demonstrated via ground and flight testing leading to down-select one improved IRS solution for the V-22. ***FY 2018 Base Plans:*** Funding continues for the development of a new IRS system for the V-22. The IRS system masks the infrared signature of an aircraft which increases the survivability. FY18 funding will provide for continued Engineering & Manufacturing Development of upgraded IRS system. ***FY 2018 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: MV-22 Technology Insertion	2.658	5.641	11.072	0.000	11.072
Articles:	-	-	-	-	-
Description: The MV-22 Technology Insertion development effort will provide new capabilities focused on enhancing survivability; software and hardware modularity and maturation of aircraft interfaces to support interoperability. Tech Insertion includes risk reduction and development efforts such as Multi-Spectral Sensor Integration, to include Improved Forward Looking Infrared, Degraded Visual Environment Mitigation/Electronic Warfare, Helmet Mounted Display, Modular Avionics/Cyber Security Implementation, Enhanced Defensive Weapons Capabilities, Radio Frequency Threat Protection, and Airborne Networking. ***FY 2016 Accomplishments:*** Funds provided for software and hardware modularity efforts as part of Modular Avionics development to include Bus Interface Controller (BIC) development. Funds also provide for Enhanced Defensive Weapons Capabilities. ***FY 2017 Plans:*** Funds provided for software and hardware modularity efforts as part of Modular Avionics development to include BIC development. Funds also provide for Enhanced Defensive Weapons Capabilities. ***FY 2018 Base Plans:*** FY18 Technology Insertion funding provides for efforts to include risk reduction and development efforts such as Multi-Spectral Sensor Integration, including Improved Forward Looking Infrared, Degraded Visual Environment Mitigation, Electronic Warfare, Helmet Mounted Display, Modular Avionics/Cyber Security Implementation, Enhanced Defensive Weapons Capabilities, Improved Survivability (Radio Frequency Threat Protection) and Airborne Networking. ***FY 2018 OCO Plans:*** N/A					
Title: V-22 Development Support, Test and Evaluation	20.361	20.743	23.834	0.000	23.834
Articles:	-	-	-	-	-
Description: Fund Government Engineering, Contractor Engineering, including Follow-On Test Evaluation (FOT&E), Developmental Test & Engineering (DT&E), and Operational Test & Evaluation (OT&E) for the MV-22 flight events. Perform Government oversight. Execute test program risk reduction efforts, as well as fund Tactical Training Theatre Assessment and Planning Phase III program to ensure that all Navy training and testing at sea is compliant with the major Federal environmental laws.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Funds provided for continued support of FOT&E, DT&E and OT&E to include flight control software, vehicle system operating software, inlet distortion, APR-39D(V)2, structural fatigue, envelope expansion, software airframe loads, nacelle sails, Integrated Aircraft Survivability Equipment, Nacelle Sail testing, traffic collision avoidance system, bonded tabs, aerial refueling system and refueling envelope, Tactical Training Theatre Assessment and Planning Phase III and CMV risk reduction. ***FY 2017 Plans:*** Funds provided for continued support of FOT&E, DT&E and OT&E to include flight control software, vehicle system operating software, inlet distortion, APR-39D(V)2, structural fatigue, envelope expansion, software airframe loads, nacelle sails, Integrated Aircraft Survivability Equipment, Nacelle Sail testing, traffic collision avoidance system, bonded tabs, aerial refueling system and refueling envelope, Tactical Training Theatre Assessment and Planning Phase III and CMV risk reduction. ***FY 2018 Base Plans:*** Funds provided for continued support of FOT&E, DT&E and OT&E to include flight control software, vehicle system operating software, inlet distortion, APR-39D(V)2, structural fatigue, envelope expansion, software airframe loads, nacelle sails, Integrated Aircraft Survivability Equipment, Nacelle Sail testing, traffic collision avoidance system, bonded tabs, aerial refueling system and refueling envelope, Tactical Training Theatre Assessment and Planning Phase III and CMV risk reduction. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	74.366	189.423	171.386	0.000	171.386

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN 0164: *V-22*	1,463.564	1,579.115	697.078	-	697.078	822.748	731.925	999.432	1,196.660	3,586.235	36,823.654

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN 0590: *V-22 Series*	145.188	249.285	228.321	-	228.321	254.688	322.007	340.845	538.696	2,740.951	5,838.600
• APN 0605/J0164: *V-22 Inital Spares*	0.543	0.033	1.897	-	1.897	0.000	0.000	53.757	43.252	Continuing	Continuing
• RDTE 1160403BB: *CV-22 Special Operations, Aviation Systems*	0.000	15.590	14.259	-	14.259	21.635	27.961	8.000	0.000	0.000	90.438
• RDTE BA07 0401318F: *CV-22 USAF BA07*	26.821	16.702	22.519	-	22.519	16.641	14.731	14.985	15.293	41.970	207.360

Remarks

D. Acquisition Strategy

The MV-22 is a post Milestone III ACAT-IC program. As a result of mishaps during and subsequent to MV-22 Operational Evaluation (Apr and Dec 00), the program was restructured employing a phased approach to return to flight and tactical introduction. The Contractor and Government defined deficient areas within the program/ aircraft requiring correction prior to return to flight. A Block Upgrade approach was planned, with required efforts identified in Block "A", "B", and "C". Block "A" included those efforts necessary to return the V-22 to safe and operational fleet operations. Block "B" included those efforts necessary to improve the effectiveness and suitability of the aircraft. Block "C" includes mission enhancements like weather radar, cabin effectiveness suitability improvements, i.e., Environmental Control System, and Forward Firing ALE-47. Non-recurring development activities are to be initiated and completed for all efforts identified in Block "A", "B", and "C". The Contractor will develop specific Statements of Work and Preliminary Specification Change Notices required to integrate the Block Upgrade efforts into the baseline Program. A Systems Requirements Review, Initial Design Review, and Final Design Review was held for each of the Block efforts so the design maturity could be reviewed and the Government could redirect activities as appropriate. The CV-22 Engineering Manufacturing and Development program is also structured in Blocks to define an evolutionary approach to achieving full operational capability. Block "0" is the initial baseline CV-22 variant. Block "10" enhances mission capability with the addition of terrain following radar, additional fuel tanks, additional radios, and Block "20" includes capabilities such as radio frequency and infrared countermeasures improvements. Additional Blocks are in the planning stages to continue the growth process throughout the operational life of the weapon system. The Government will issue an RFP to the Contractor and upon award, an Integrated Baseline Review, Preliminary Design Review, Integrated Logistics Assessment and a Critical Design Review will be held to assess the design maturity of the CMV-22. The CMV-22 will add (1) the capability to meet the range requirements that the Carrier Onboard Delivery (COD) mission demands (2) a high frequency radio to transmit/receive beyond line of sight over water and (3) a public address system for use while transporting passengers in support of the COD mission.

E. Performance Metrics

Milestone Reviews.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604262N / *V-22A*	Project (Number/Name) 1425 / *V-22*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MV-22 Hardware Dev Airframe	SS/CPIF	Bell Boeing : Ridley Park, PA	67.430	13.714	Jan 2016	21.768	Jan 2017	16.827	Jan 2018	-		16.827	139.474	259.213	259.213
MV-22 Hardware Dev Propulsion	SS/CPIF	Rolls-Royce Corp. : Indianapolis, IN	196.461	0.086	Nov 2015	0.162	Nov 2016	0.167	Nov 2017	-		0.167	2.125	199.001	199.001
MV-22 Digital Interoperability	WR	Various : Various	6.635	4.503	Jan 2016	9.900	Jan 2017	12.200	Jan 2018	-		12.200	40.500	73.738	-
MV-22 Software Reprogrammable Payload (SRP)	WR	NRL : China Lake, CA	0.000	5.200	Mar 2016	6.000	Jan 2017	6.000	Jan 2018	-		6.000	0.000	17.200	-
CMV-22 Development	C/CPIF	Bell Boeing : Ridley Park, PA	0.000	16.084	Mar 2016	71.563	Nov 2016	65.185	Nov 2017	-		65.185	36.726	189.558	189.558
MV-22 Aerial Refueling System Development	SS/CPIF	Bell Boeing : Ridley Park, PA	0.000	10.800	May 2016	24.752	Jan 2017	17.323	Jan 2018	-		17.323	15.210	68.085	68.085
MV-22 Electrical System Re-Design	C/BA	Bell Boeing : Ridley Park, PA	0.000	0.000		20.200	Dec 2016	8.200	Dec 2017	-		8.200	101.105	129.505	129.505
MV-22 IRS Re-design	C/BA	Various : Ridley Park, PA	0.000	0.960	Sep 2016	8.694	Dec 2016	10.578	Jan 2018	-		10.578	24.028	44.260	44.260
MV-22 Tech Insertion	C/CPFF	Bell-Boeing : Ridley Park, PA	0.000	2.658	Feb 2016	5.641	Nov 2016	11.072	Mar 2018	-		11.072	191.172	210.543	210.543
Prior year Prod Dev no longer funded in the FYDP	Various	Various : Various	5,106.472	0.000		0.000		0.000		-		0.000	0.000	5,106.472	-
		Subtotal	5,376.998	54.005		168.680		147.552		-		147.552	550.340	6,297.575	-

Remarks

FY18 shows Infrared Suppressor & Technical Insertion, previously begun in the Hardware Development Airframe line, as their own cost elements.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MV-22 Govt Engineering Sppt	WR	Various : Pax River, MD	1,106.684	2.808	Nov 2015	2.829	Nov 2016	2.887	Nov 2017	-		2.887	24.751	1,139.959	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604262N / *V-22A*	Project (Number/Name) 1425 / *V-22*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CMV-22 Govt Engineering Sppt	WR	Various : Pax River, MD	0.000	0.820	Nov 2015	1.189	Nov 2016	1.298	Nov 2017	-		1.298	3.521	6.828	-
Prior Year Support no longer funded in the FYDP	Various	Various : Various	189.718	0.000		0.000		0.000		-		0.000	0.000	189.718	-
		Subtotal	1,296.402	3.628		4.018		4.185		-		4.185	28.272	1,336.505	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MV-22 Dev Test & Evaluation	WR	NAWCAD : Pax River, MD	1,027.991	13.392	Nov 2015	13.455	Nov 2016	6.699	Nov 2017	-		6.699	64.615	1,126.152	-
MV-22 Operational Test & Evaluation	WR	OT&E Force : Norfolk, VA	55.597	1.259	Dec 2015	1.362	Dec 2016	1.476	Dec 2017	-		1.476	23.006	82.700	-
CMV-22 Dev Test & Evaluation	WR	NAWCAD : Pax River, MD	0.000	0.000		0.000		9.100	Nov 2017	-		9.100	10.280	19.380	-
Prior Year T & E no longer funded in the FYDP	Various	Various : Various	48.200	0.000		0.000		0.000		-		0.000	0.000	48.200	-
		Subtotal	1,131.788	14.651		14.817		17.275		-		17.275	97.901	1,276.432	-

Remarks

FY18 begins Developmental Testing Risk Reduction efforts for the CMV-22 Aircraft.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MV-22 Engineering Tech Sppt	Various	Various : Various	1,047.176	0.426	Nov 2015	0.257	Nov 2016	0.259	Nov 2017	-		0.259	6.350	1,054.468	-
MV-22 Management Sppt Svc	Various	Various : Various	156.884	0.667	Nov 2015	0.674	Nov 2016	0.681	Nov 2017	-		0.681	6.918	165.824	-
MV-22 Program Mgmt Support	WR	NAWCAD : Pax River, MD	60.890	0.786	Nov 2015	0.795	Nov 2016	0.800	Nov 2017	-		0.800	10.741	74.012	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604262N / *V-22A*	Project (Number/Name) 1425 / *V-22*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MV-22 Travel	WR	Various : Various	16.534	0.203	Jan 2016	0.182	Jan 2017	0.185	Sep 2018	-		0.185	2.300	19.404	-
CMV-22 Travel	WR	Various : Various	0.000	0.000		0.000		0.040	Sep 2018	-		0.040	0.080	0.120	-
CMV-22 Engineering Tech Sppt	Various	Various : Various	0.000	0.000		0.000		0.409	Jan 2018	-		0.409	0.800	1.209	-
Prior Year Mgmt Svcs no longer funded in the FYDP	Various	Various : Various	41.087	0.000		0.000		0.000		-		0.000	0.000	41.087	-
		Subtotal	1,322.571	2.082		1.908		2.374		-		2.374	27.189	1,356.124	-

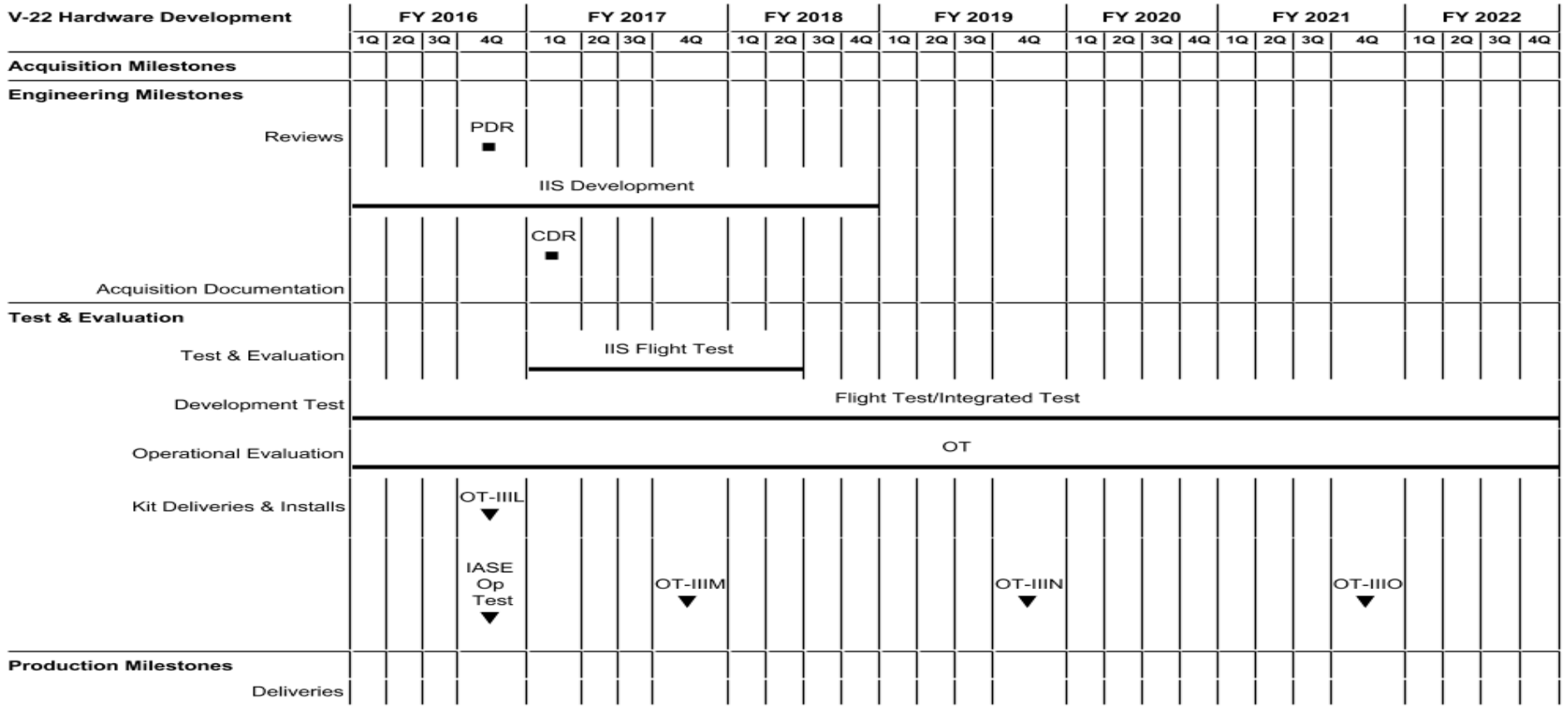
Remarks

CMV-22 Engineering Tech Support and Travel broken out separately beginning in FY-18.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	9,127.759	74.366		189.423		171.386		-		171.386	703.702	10,266.636	-

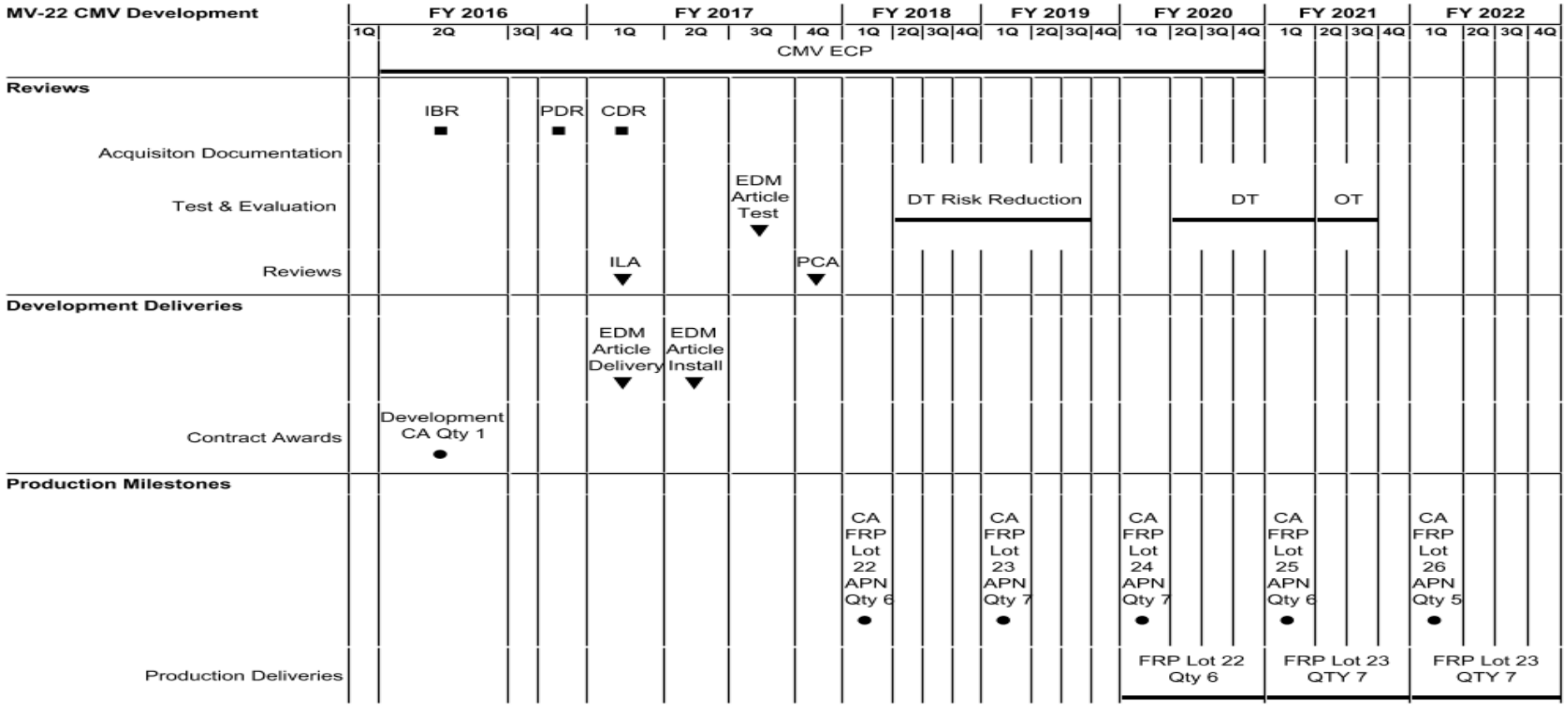
Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*



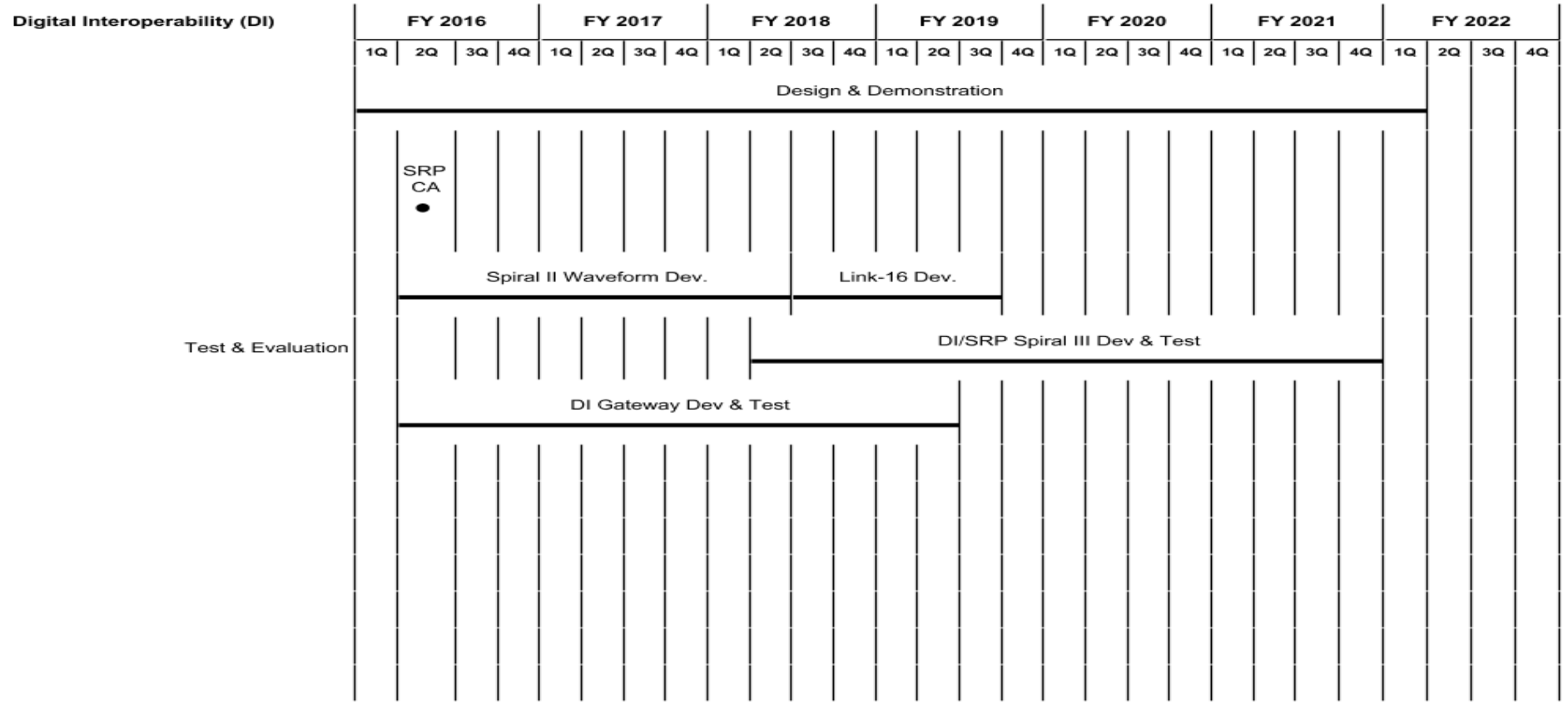
2018OSD - 0604262N - 1425

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*



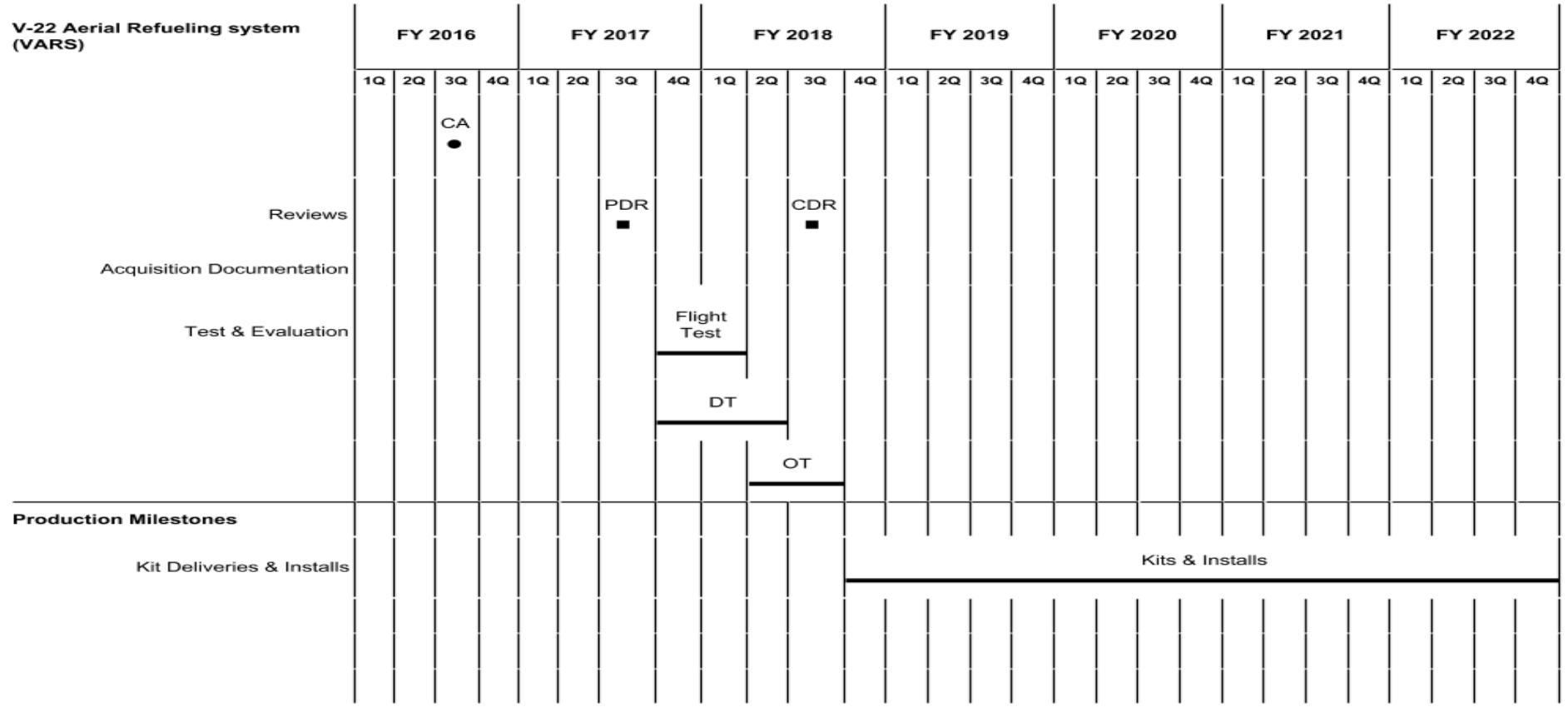
2018OSD - 0604262N - 1425

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*



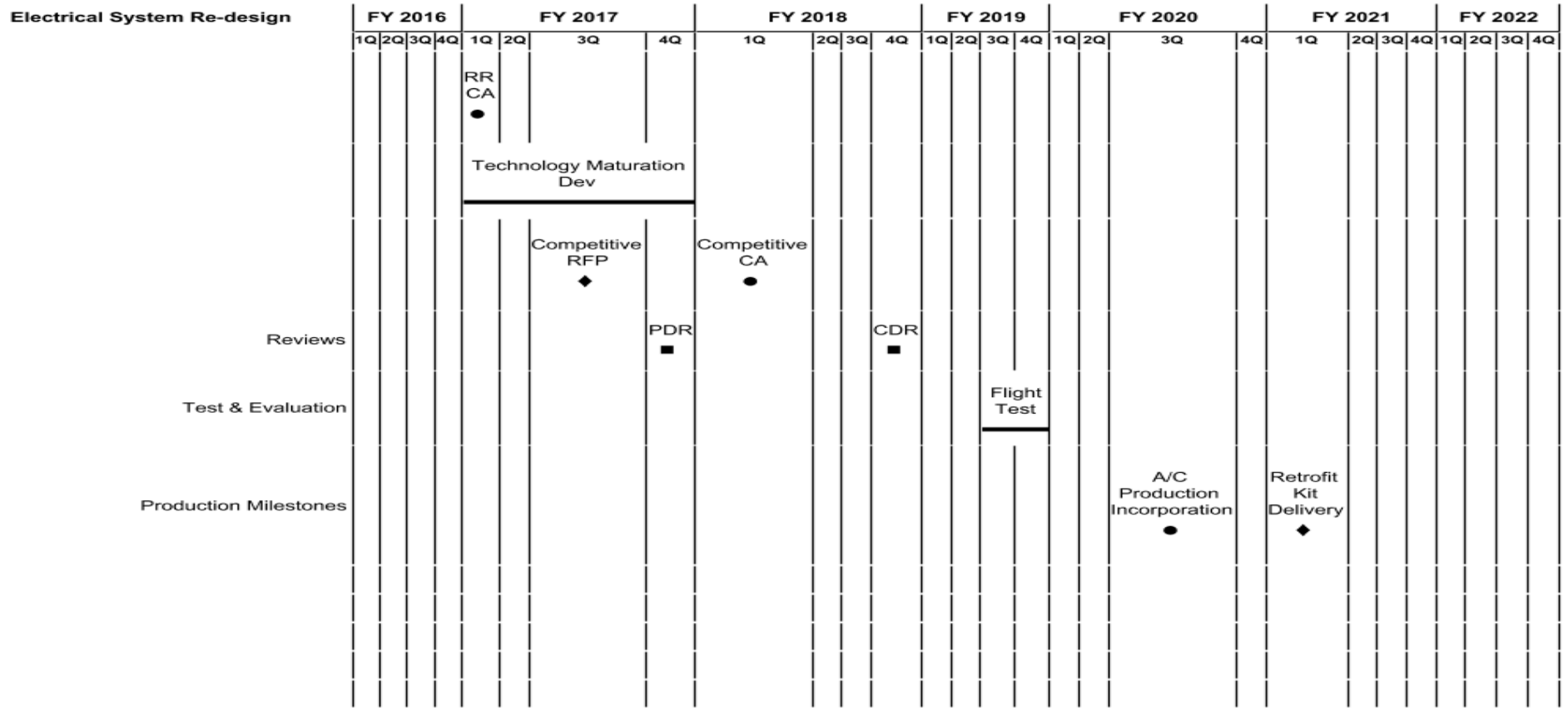
2018OSD - 0604262N - 1425

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*



2018OSD - 0604262N - 1425

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*



2018OSD - 0604262N - 1425

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

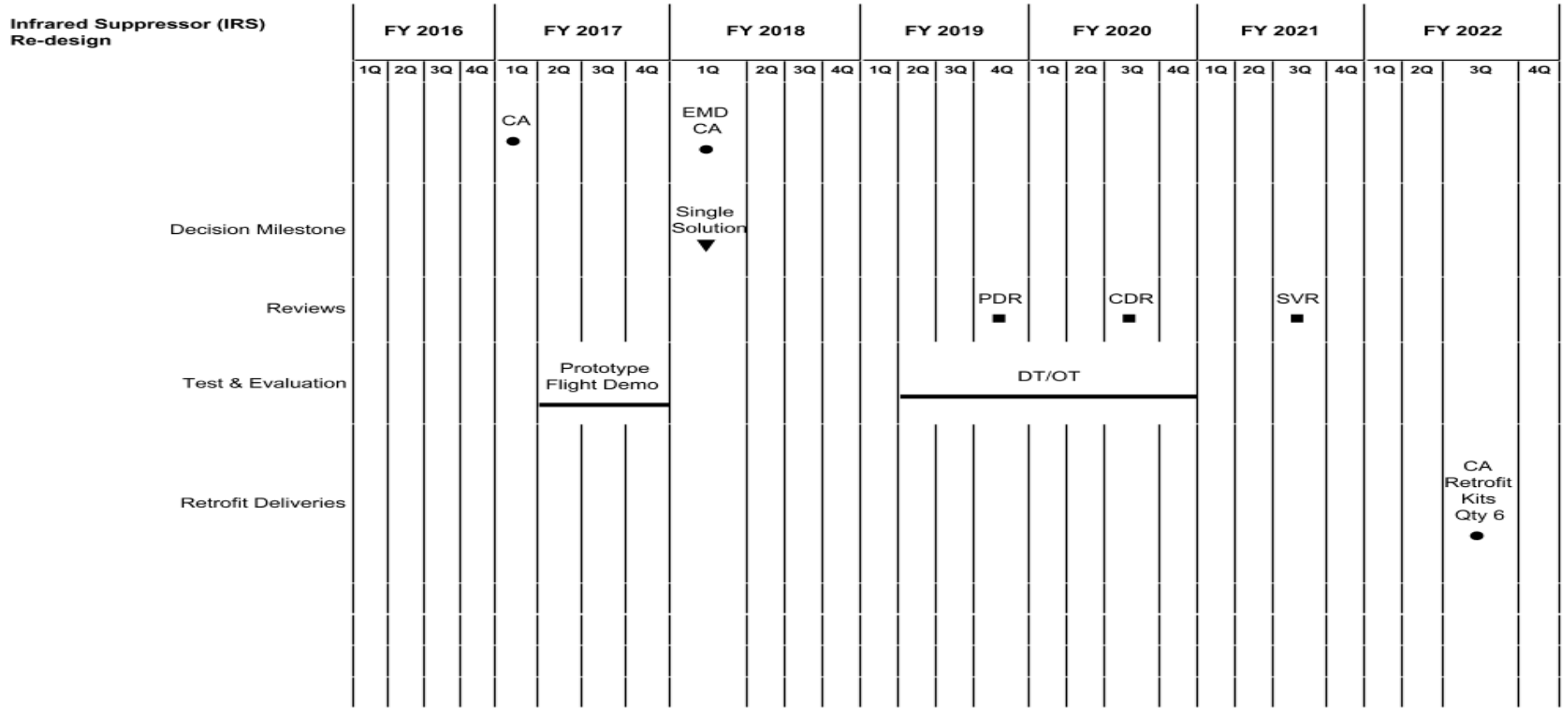


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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

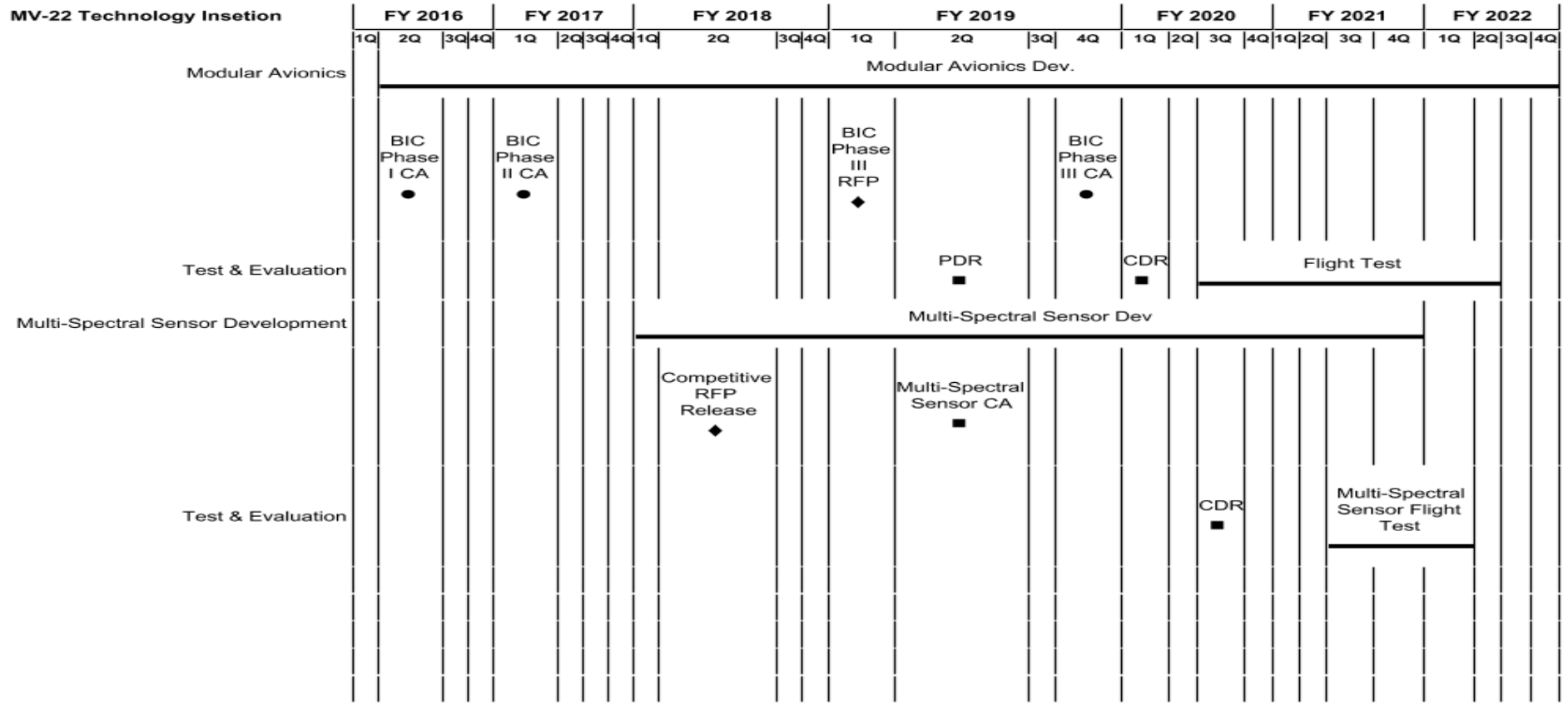

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
V-22 Hardware Development				
Engineering Milestones: Reviews: Preliminary Design Review	4	2016	4	2016
Engineering Milestones: Reviews: Improved Inlet Solution - Contract Award/ Development effort	1	2016	4	2018
Engineering Milestones: Reviews: Critical Design Review	1	2017	1	2017
Test & Evaluation: Test & Evaluation: IIS Flight Test	1	2017	2	2018
Test & Evaluation: Development Test: Development Flight Test / Integrated Test (IT-IIID) & Continuous software sustainment developmental testing	1	2016	4	2022
Test & Evaluation: Operational Evaluation: Operational Testing	1	2016	4	2022
Test & Evaluation: Kit Deliveries & Installs: Operational Testing (OT-IIIL)	4	2016	4	2016
Test & Evaluation: Kit Deliveries & Installs: Integrated Aircraft Survivability Equipment - Operational Testing	4	2016	4	2016
Test & Evaluation: Kit Deliveries & Installs: Operational Testing (OT-IIIM)	4	2017	4	2017
Test & Evaluation: Kit Deliveries & Installs: Operational Testing (OT-IIIN)	4	2019	4	2019
Test & Evaluation: Kit Deliveries & Installs: Operational Testing (OT-IIIO)	4	2021	4	2021
MV-22 CMV Development				
Engineering Change Proposal	2	2016	4	2020
Reviews: Integrated Baseline Review	2	2016	2	2016
Reviews: Preliminary Design Review	4	2016	4	2016
Reviews: Critical Design Review	1	2017	1	2017
Reviews: Test & Evaluation: Engineering Development Model Test	3	2017	3	2017
Reviews: Test & Evaluation: Developmental Test Risk Reduction	2	2018	3	2019
Reviews: Test & Evaluation: Developmental Test	2	2020	1	2021
Reviews: Test & Evaluation: Operational Test	2	2021	3	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Reviews: Reviews: Integrated Logistics assessment	1	2017	1	2017
Reviews: Reviews: Physical Configuration Audit	4	2017	4	2017
Development Deliveries: Engineering Development Model Delivery	1	2017	1	2017
Development Deliveries: Engineering Development Model Install	2	2017	2	2017
Development Deliveries: Contract Awards: Development Contract Award	2	2016	2	2016
Production Milestones: Lot 22 APN MV22 CMV Qty 6	1	2018	1	2018
Production Milestones: Lot 23 APN MV22 CMV Qty 7	1	2019	1	2019
Production Milestones: Lot 24 APN MV22 CMV Qty 7	1	2020	1	2020
Production Milestones: Lot 25 APN MV22 CMV Qty 6	1	2021	1	2021
Production Milestones: Lot 26 APN MV22 CMV Qty 5	1	2022	1	2022
Production Milestones: Production Deliveries: Lot 22 APN CMV Qty 6	1	2020	4	2020
Production Milestones: Production Deliveries: Lot 23 APN CMV Qty 7	1	2021	4	2021
Production Milestones: Production Deliveries: Lot 24 APN CMV Qty 7	1	2022	4	2022
Digital Interoperability (DI)				
System Design & Demonstration	1	2016	1	2022
SRP Contract Award	2	2016	2	2016
SRP Spiral II Waveform Dev.	2	2016	2	2018
Link-16 Dev./ntegration	3	2018	3	2019
Test & Evaluation: DI/SRP Spiral III Deveopment and Test	2	2018	4	2021
Test & Evaluation: DI Gateway Development & Test	2	2016	2	2019
V-22 Aerial Refueling system (VARS)				
Contract Award	3	2016	3	2016
Reviews: Preliminary Design Review	3	2017	3	2017
Reviews: Critical Design Review	3	2018	3	2018
Test & Evaluation: Prototype Test	4	2017	1	2018
Test & Evaluation: Developmental Testing	4	2017	2	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test & Evaluation: Operational Testing	2	2018	3	2018
Production Milestones: Kit Deliveries & Installs: Kits & Installs	4	2018	4	2022
Electrical System Re-design				
Risk Reduction Contract Award	1	2017	1	2017
Technology Maturation Development	1	2017	4	2017
Competitive RFP	3	2017	3	2017
Competitive Contract Award	1	2018	1	2018
Reviews: Preliminary Design Review	4	2017	4	2017
Reviews: Critical Design Review	4	2018	4	2018
Test & Evaluation: Flight Test	3	2019	4	2019
Production Milestones: Aircraft Production Incorporation	3	2020	3	2020
Production Milestones: Retrofit Kit Delivery	1	2021	1	2021
Infrared Suppressor (IRS) Re-design				
Phase I Contract Awards	1	2017	1	2017
EMD Contract Award	1	2018	1	2018
Decision Milestone: Single Solution	1	2018	1	2018
Reviews: Preliminary Design Review	4	2019	4	2019
Reviews: Critical Design Review	3	2020	3	2020
Reviews: System Verification Review	3	2021	3	2021
Test & Evaluation: Prototype Flight Demonstrations	2	2017	4	2017
Test & Evaluation: Developmental/Operational Testing	2	2019	4	2020
Retrofit Deliveries: IRS Kits Qty 6 Contract Award	3	2022	3	2022
MV-22 Technology Insetion				
Modular Avionics: Modular Avionics Deveopment	2	2016	4	2022
Modular Avionics: Bus Interface Controller (BIC) Phase I Contract Award	2	2016	2	2016
Modular Avionics: BIC Phase II Contract Award	1	2017	1	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604262N / *V-22A*	**Project (Number/Name)** 1425 / *V-22*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Modular Avionics: BIC Phase III Competitive RFP Release	1	2019	1	2019
Modular Avionics: BIC Phase III Contract Award	4	2019	4	2019
Test & Evaluation: Preliminary Design Review	2	2019	2	2019
Test & Evaluation: Modular Avionics Critical Design Review	1	2020	1	2020
Test & Evaluation: Modular Avionics Critical Flight Test	3	2020	2	2022
Multi-Spectral Sensor Development: Multi-Spectral Sensor Development Dev	1	2018	4	2021
Multi-Spectral Sensor Development: Competitive RFP Release	2	2018	2	2018
Multi-Spectral Sensor Development: Multi-Spectral Sensor Development CA	2	2019	2	2019
Test & Evaluation: Critical Design Review	3	2020	3	2020
Test & Evaluation: Flight Test	3	2021	1	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604264N *I Air Crew Systems Development*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	116.770	10.201	13.577	13.235	-	13.235	18.697	18.464	18.099	1.887	Continuing	Continuing
0606: *Aircrew System Development*	116.770	10.201	13.577	13.235	-	13.235	18.697	18.464	18.099	1.887	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Aircrew Systems Development program provides Engineering and Manufacturing Development of Aviation Life Support Systems to protect aircrew and flight deck personnel from current and future threats including: directed energy weapons, chemical/biological/radiological agents/fallout, ballistic projectiles, temperature extremes, heat/fire, low concentration oxygen environments, high dynamic forces during emergency egress, hearing loss, and high "G" forces. The program also provides development for the following capabilities: night vision capability, hearing and head protection, aircrew endurance, aircrew performance, man mounted data display, communications, clothing, in flight restraint and stability emergency egress and descent, escape and evasion, survival and rescue, crash protection, and anthropometric sizing for small aircrew. Acquisition initiatives include: competition, the application of streamlining initiatives, use of non-developmental items, joint and tri-service developments, and the pursuit of NATO/allied cooperative ventures, which expedite introduction of new products into Navy and Marine Corps fixed and rotary wing aircraft, reduce costs, and promote commonality.

JUSTIFICATION FOR BUDGET ACTIVITY:
This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	12.665	13.577	15.113	-	15.113
Current President's Budget	10.201	13.577	13.235	-	13.235
Total Adjustments	-2.464	0.000	-1.878	-	-1.878
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.300	0.000			
• SBIR/STTR Transfer	-0.163	0.000			
• Program Adjustments	0.000	0.000	-6.000	-	-6.000
• Rate/Misc Adjustments	-0.001	0.000	4.122	-	4.122

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604264N *I Air Crew Systems Development*

Change Summary Explanation

Schedule:

1. Acquisition Milestones:
A. Laser Eye Protection (LEP) - Milestone B (MS B), Milestone C (MS C), Initial Operational Capability (IOC) and Full Rate Production (FRP) delayed due to extended revision of threat requirement and decision not to procure United States Air Force (USAF) spectacle.

B. Enhanced Visual Acuity (EVA) - MS B and MS C dates changed to reflect revised schedule.

2. System Development:
A. LEP - System Readiness Review 1 moved from 4Q FY15 to 1Q FY17; System Function Review/System Readiness Review 2 moved from 2Q FY17 to 1Q FY18; Critical Design Review moved from 1Q FY18 to 2Q FY19; Test Readiness Review moved from 2Q FY18 to 4Q FY19; System Verification Review/ Production Readiness Review moved from 2Q FY19 to 2Q FY21; Physical Configuration Audit moved from 2Q FY20 to 1Q FY22.

B. EKB - Added an Application Development and Integration period to the schedule to reflect on-going developmental EKB efforts.

C. EVA - Moved Preliminary Design Review from 1Q FY17 to 2Q FY19; moved Critical Design Review from 4Q FY17 to 1Q FY20; moved Test Readiness Review from 3Q FY18 to 1Q FY21; moved System Verification Review/Production Readiness Review from 3Q FY19 to 1Q FY22.

3. Test and Evaluation:
A. LEP - Developmental Test shifted from 4Q FY18 to 1Q FY20.

B. EVA - Developmental Test shifted from 3Q FY18 to 3Q FY20; Operational Test shifted from 2Q FY20 to 3Q FY22.

4. Production Milestones:
A. LEP - Engineering Development Model (EDM), Low Rate Initial Production (LRIP) and Full Rate Production (FRP) contract award dates changed to align with milestone decisions.

B. EVA - EDM, LRIP 1 and LRIP 2 contract award dates changed to align with milestone decisions.

5. Deliveries:
A. Laser Eye Protection Spectacles (LEP) - Engineering Development Model (EDM) quantity changed from 62 to 91; Low Rate Initial Production (LRIP) 1 quantity changed from 550 to 350; Full Rate Production (FRP) 1 quantity changed from 665 to 535.

B. Enhanced Visual Acuity (EVA) - EDM quantity changed from 25 to 12; LRIP 1 quantity changed from 6 to 25 and LRIP 2 quantity changed from 64 to 100.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604264N *I Air Crew Systems Development*

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604264N / *Air Crew Systems Development*	Project (Number/Name) 0606 / *Aircrew System Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0606: *Aircrew System Development*	116.770	10.201	13.577	13.235	-	13.235	18.697	18.464	18.099	1.887	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

AIRCREW SYSTEMS: Laser Eye Protection (LEP), Enhanced Visual Acuity (EVA), and Aircrew Systems (AS).

Under the above projects, LEP provides eye protection solutions that will provide Fixed, Rotary Wing and Patrol pilots and aircrew with multiple wavelength fixed threat and hazard protection during day and night unaided and Night Vision Goggle aided missions. LEP will consist of a suite of products to include spectacles, goggles and visors. The LEP (visor, spectacle or goggle format) is being developed for compatibility with all required USN/USMC Aviation Life Support Equipment as well as cockpit displays, night vision and fire control systems. EVA provides a digital night vision capability to address critical capability gaps in low and no light illumination levels (night vision). Future increments will provide enhanced visibility in degraded visual environment. Aircrew Systems includes State of the Art (SOA) and Survival Systems which provides for the yearly evaluation of the survival, clothing and other aircrew systems that provide upgraded performance, fill capability gaps, improve aircrew endurance and performance, safety and enhance survivability.

AIRCRAFT SYSTEMS: Aircraft Systems include studies for Advanced Crash Protection, SOA, Survival Systems and Electronic Knee Board (EKB). EKB provides digital display that will allow aircrew to store, search, and view significant amounts of data required for mission accomplishment during flight operations. SOA provides for the yearly evaluation of the survival systems that provide upgraded performance, improve endurance, fill capability gaps and improve performance, safety and enhance survivability.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Aircrew System Development	7.724	13.076	10.938	0.000	10.938
Articles:	-	-	-	-	-
Description: Laser Eye Protection (LEP) provides Spectacles (both Self Protection and Multi-Wavelength), goggles, step-in visor and Laser Eye Protection Improvement Program (LEPIP) which monitors emerging threats and changes to technology. Enhanced Visual Acuity (EVA) provides a digital night vision capability to address critical capability gaps in low and no light illumination (Night Vision). Future increments will provide enhanced visibility in degraded visual environments. AS includes SOA.					
FY 2016 Accomplishments: Laser Eye Protection (LEP): Continued research & development for next increment of threat spectacles.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604264N / *Air Crew Systems Development*	**Project (Number/Name)** 0606 / *Aircrew System Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Enhanced Visual Acuity (EVA): Continued development.Analysis of Alternatives (AoA) complete. Capability Development Document (CDD) draft complete and in routing. State of the Art (SOA): Continued a yearly evaluation and authorization of the survival, clothing, and other aircrew systems items. Identification, testing and approval of items that provide upgraded performance, fill capability gaps, improve aircrew endurance, improve aircrew performance and safety and enhance survivability. ***FY 2017 Plans:*** Laser Eye Protection (LEP): Continue research and development of the next increment of threat spectacle, complete Systems Readiness Review 1 (SRR1), and receive Milestone B Decision. Enhanced Visual Acuity (EVA): Continue development. State of the Art (SOA): Continue a yearly evaluation and authorization of the survival, clothing, and other aircrew systems items. Identification, testing and approval of items that provide upgraded performance, fill capability gaps, improve aircrew endurance, improve aircrew performance and safety and enhance survivability. ***FY 2018 Base Plans:*** Laser Eye Protection (LEP): Continue research and development of the next increment of threat spectacle, complete System Readiness Review 2 (SRR2). Enhanced Visual Acuity (EVA): Continue development, award Engineering, Demonstration and Manufacturing contract and receive Milestone B Decision. State of the Art (SOA): Continue a yearly evaluation and authorization of the survival, clothing, and other aircrew systems items. Identification, testing and approval of items that provide upgraded performance, fill capability gaps, improve aircrew endurance, improve aircrew performance and safety and enhance survivability. Physiological Episode Protection: Mitigate risk of loss of aircrew and Tactical and Training jet platforms due to Physiological Episodes using monitoring and alert systems. Develop, prototype, and test a physiological monitoring system that detects physiological episodes and provides a warning in time to enable the aircrew to execute emergency procedures and recover safely. ***FY 2018 OCO Plans:*** N/A					
Title: Aircraft Systems Development	2.477	0.501	2.297	0.000	2.297
Articles:	-	-	-	-	-
Description: Aircraft Systems include studies for Advanced Crash Protection, State of the Art (SOA), and Electronic Knee Board (EKB).					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604264N / *Air Crew Systems Development*	**Project (Number/Name)** 0606 / *Aircrew System Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: FY17 and out, the Electronic Knee Board is captured under the JMPS PE 0605215N. Electronic Knee Board (EKB): Continue development, complete design review, select configuration 1 hardware, conduct integrated testing, and Authorizations to Work. Establish logistics support plan to support first hardware procurement. State of the Art (SOA): Continue a yearly evaluation and authorization to include identification, testing and approval of items that provide upgraded performance, fill capability gaps, improve endurance, improve performance and safety and enhance survivability. ***FY 2017 Plans:*** State of the Art (SOA): Continue a yearly evaluation and authorization to include identification, testing and approval of items that provide upgraded performance, fill capability gaps, improve endurance, improve performance and safety and enhance survivability. ***FY 2018 Base Plans:*** State of the Art (SOA): Continue a yearly evaluation and authorization to include identification, testing and approval of items that provide upgraded performance, fill capability gaps, improve endurance, improve performance and safety and enhance survivability. Oxygen Cart (Peculiar Support Equipment (PSE)): The Emergency Oxygen Source (EOS) in the F/A-18 Navy Aircrew Common Ejection Seat (NACES) survival kit will be changed to afford the pilot more emergency oxygen in the event of a hypoxia incidence. This change will drive a requirement for PSE O2 servicing cart used to service the EOS cylinder. This part of the effort will develop, prototype and test an oxygen cart to reach the pressures required. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	10.201	13.577	13.235	0.000	13.235

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/4268: *Aviation Life Support*	29.586	22.528	16.716	23.151	39.867	13.996	26.871	27.822	42.378	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604264N / *Air Crew Systems Development*	**Project (Number/Name)** 0606 / *Aircrew System Development*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0575: *Aviation Life Support Mods*	0.000	0.000	0.000	-	0.000	0.000	0.000	0.453	3.060	50.718	74.599

Remarks

D. Acquisition Strategy

Commercial Off-The-Shelf /Non-Developmental Items where possible, cost type contracts.

E. Performance Metrics

Electronic Knee Board: Performance Metrics to include Design Review, Early Operational Capability (EOC) and Initial Operational Capability (IOC).
Enhanced Visual Acuity: Performance Metrics to include Preliminary Design Review (PDR), Critical Design Review (CDR), Milestone B (MS B), Milestone C (MS C) and IOC.
Laser Eye Protection: Performance Metrics to include System Readiness Review (SRR), Critical Design Review (CDR), Test Readiness Review (TRR), System Verification Review/Production Readiness Review (SVR/PRR), Milestone B (MS B), Milestone C (MS C), Initial Operating Capability (IOC) and Full Rate Production Decision Review (FRPDR).

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604264N / *Air Crew Systems Development*	**Project (Number/Name)** 0606 / *Aircrew System Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Eng Laser Eye Protection (LEP)	WR	NAWCAD : Patuxent River, MD	7.456	1.192	Apr 2016	1.052	Feb 2017	1.191	Dec 2017	-		1.191	Continuing	Continuing	Continuing
Systems Eng Laser Eye Protection (LEP)	C/FFP	NAVAIR : Patuxent River, MD	0.000	0.000	Feb 2016	0.573	Sep 2017	1.572	Mar 2018	-		1.572	3.455	5.600	5.600
Systems Eng Aircrew Systems	WR	Various : Various	12.062	1.433	Feb 2016	0.469	Feb 2017	1.224	Feb 2018	-		1.224	Continuing	Continuing	Continuing
Systems Eng Aircraft Systems	WR	Various : Various	42.992	1.487	Feb 2016	0.501	Feb 2017	1.374	Feb 2018	-		1.374	Continuing	Continuing	Continuing
Systems Eng Aircraft Systems	SS/FFP	USAF : WPAFB, OH	0.000	0.156	Nov 2016	0.000		0.000		-		0.000	0.000	0.156	-
System Eng Enhanced Visual Acuity	C/CPFF	Various : Various	0.000	3.120	Mar 2016	8.115	Mar 2017	2.496	May 2018	-		2.496	Continuing	Continuing	Continuing
System Eng Enhanced Visual Acuity	WR	Various : Patuxent River, MD	7.441	1.907	Feb 2016	2.822	Feb 2017	2.539	Feb 2018	-		2.539	Continuing	Continuing	Continuing
System Eng Electronic Knee Board	WR	NAWCAD : Patuxent River, MD	2.252	0.656	Feb 2016	0.000		0.000		-		0.000	0.000	2.908	-
System Eng Electronic Knee Board	Various	Various : Various	3.336	0.178	Apr 2016	0.000		0.000		-		0.000	0.000	3.514	-
Systems Eng Physiological Episode Protection	C/CPFF	TBD : TBD	0.000	0.000		0.000		1.870	Nov 2017	-		1.870	0.000	1.870	-
Systems Eng O2 Cart	C/CPFF	NAWCAD : Lakehurst, NJ	0.000	0.000		0.000		0.923	Feb 2018	-		0.923	0.000	0.923	-
Prior year Prod Dev cost no longer funded in the FYDP	Various	Various : Various	28.147	0.000		0.000		0.000		-		0.000	0.000	28.147	-
		Subtotal	103.686	10.129		13.532		13.189		-		13.189	-	-	-

Remarks

Electronic Knee Board (EKB) funding realigned to PE 0605215N starting in FY17.
FY18 funding received ($4.208M) in support of Enhanced Emergency Oxygen Supply (EEOS) and Physiological Episode (PE) Protection.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604264N / *Air Crew Systems Development*	Project (Number/Name) 0606 / *Aircrew System Development*	

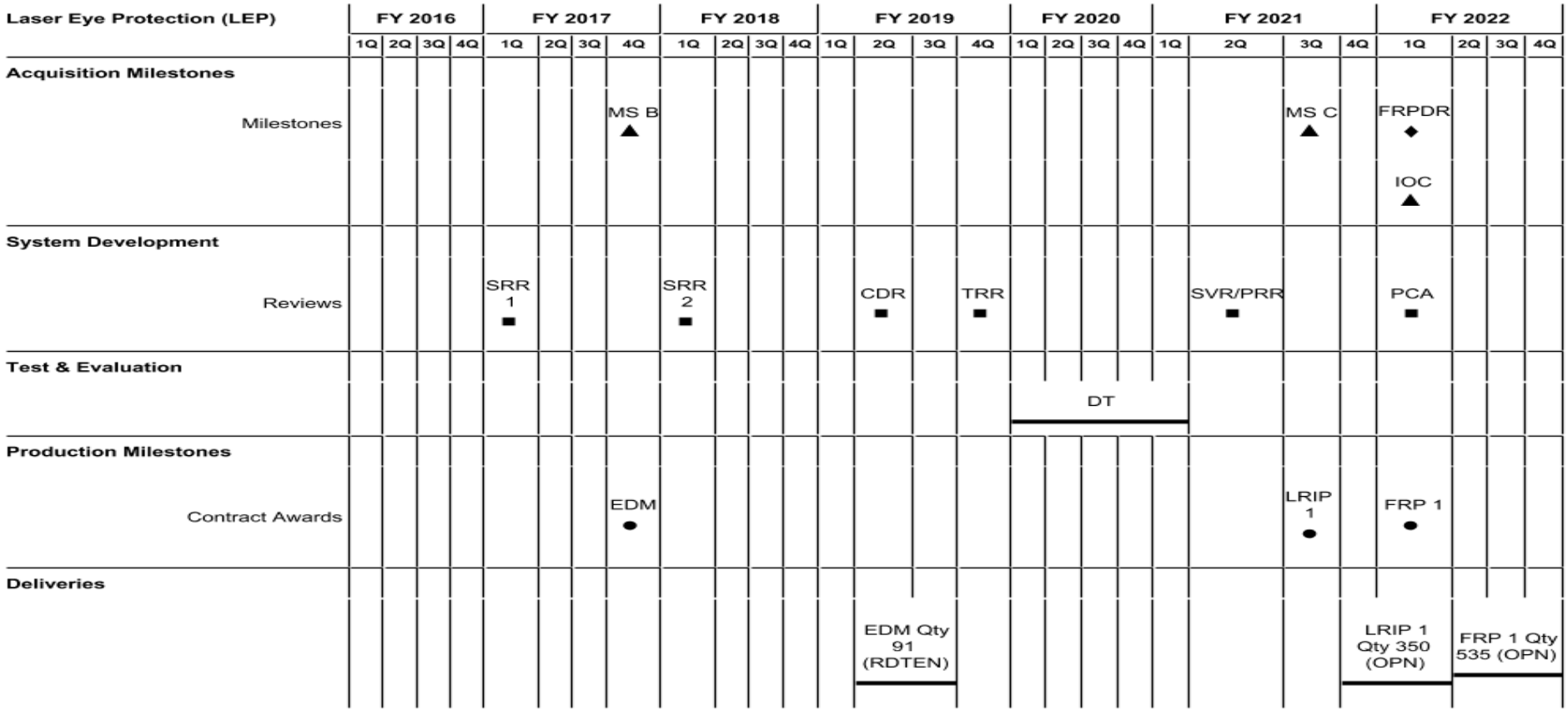
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	WR	Various : Various	1.161	0.072	Dec 2015	0.045	Dec 2016	0.046	Dec 2017	-		0.046	Continuing	Continuing	Continuing
Prior year Mgmt Svcs no longer funded in the FYDP	Various	Various : Various	11.923	0.000		0.000		0.000		-		0.000	0.000	11.923	-
		Subtotal	13.084	0.072		0.045		0.046		-		0.046	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	116.770	10.201		13.577		13.235		-		13.235	-	-	-

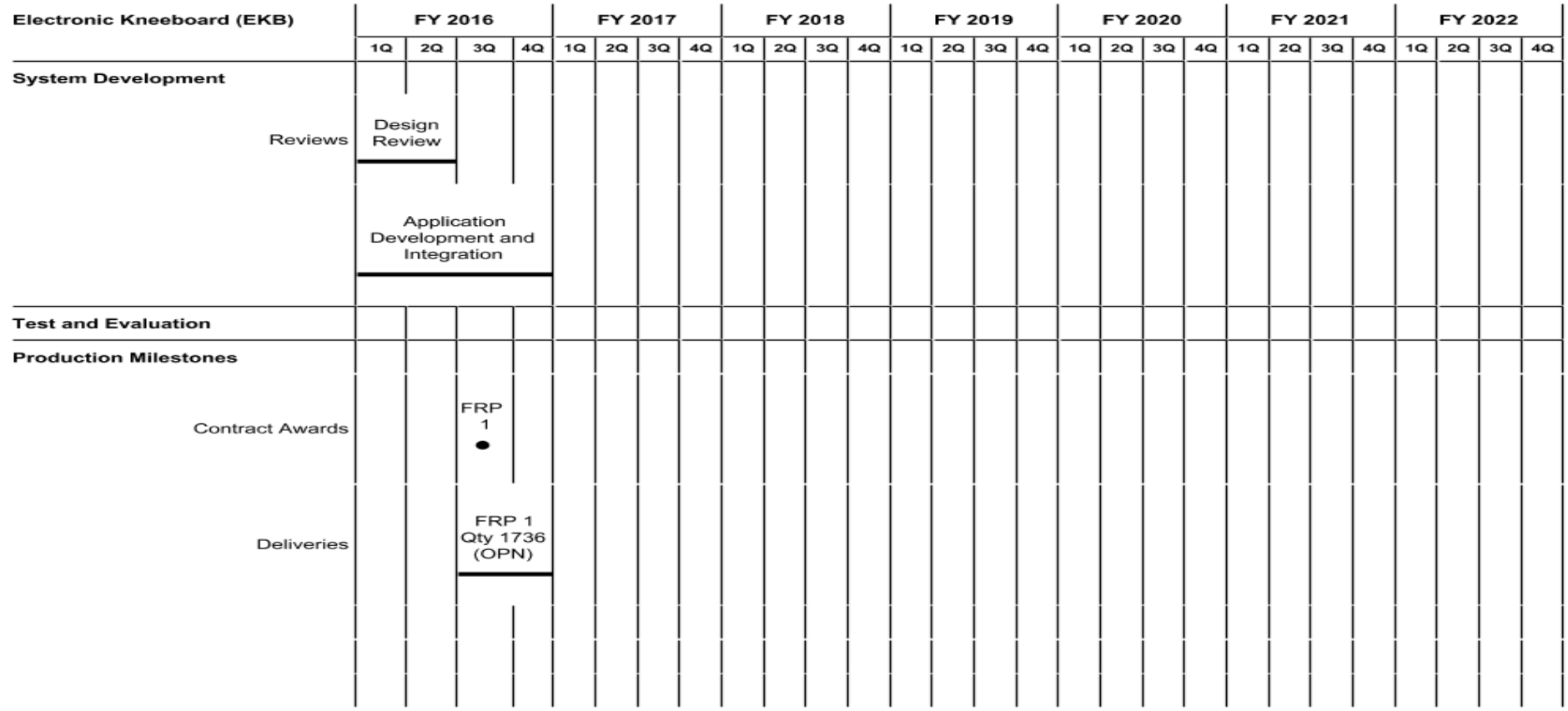
Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604264N / *Air Crew Systems Development*	**Project (Number/Name)** 0606 / *Aircrew System Development*



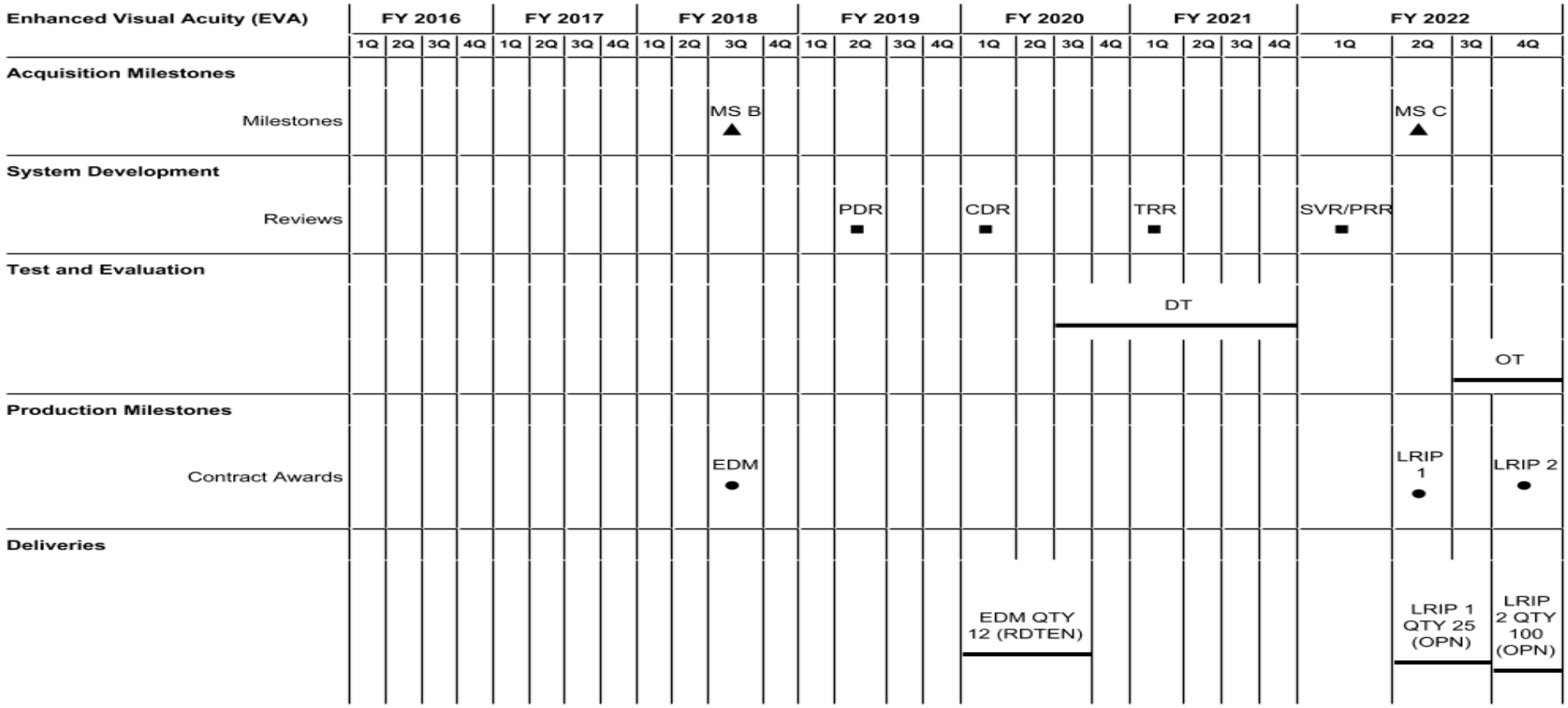
2018DON - 0604264N - 0606

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604264N / *Air Crew Systems Development*	**Project (Number/Name)** 0606 / *Aircrew System Development*



2018DON - 0604264N - 0606

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604264N / *Air Crew Systems Development*	**Project (Number/Name)** 0606 / *Aircrew System Development*



2018DON - 0604264N - 0606 EDM Units will be used for Operational Testing

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604264N / *Air Crew Systems Development*	**Project (Number/Name)** 0606 / *Aircrew System Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Laser Eye Protection (LEP)				
Acquisition Milestones: Milestones: LEP Milestone B	4	2017	4	2017
Acquisition Milestones: Milestones: LEP: Milestone C	3	2021	3	2021
Acquisition Milestones: Milestones: LEP: FRP Decision	1	2022	1	2022
Acquisition Milestones: Milestones: LEP IOC	1	2022	1	2022
System Development: Reviews: SRR 1	1	2017	1	2017
System Development: Reviews: SRR 2	1	2018	1	2018
System Development: Reviews: CDR	2	2019	2	2019
System Development: Reviews: TRR	4	2019	4	2019
System Development: Reviews: SVR/PRR	2	2021	2	2021
System Development: Reviews: PCA	1	2022	1	2022
Test & Evaluation: DT	1	2020	1	2021
Production Milestones: Contract Awards: LEP EDM (RDTEN)	4	2017	4	2017
Production Milestones: Contract Awards: LEP LRIP 1 (OPN)	3	2021	3	2021
Production Milestones: Contract Awards: LEP FRP 1 (OPN)	1	2022	1	2022
Deliveries: LEP EDM Qty 91	2	2019	3	2019
Deliveries: LEP LRIP Qty 350	4	2021	1	2022
Deliveries: LEP FRP 1 Qty 535	2	2022	4	2022
Electronic Kneeboard (EKB)				
System Development: Reviews: Design Review Complete	1	2016	2	2016
System Development: Reviews: Application Development and Integration	1	2016	4	2016
Production Milestones: Contract Awards: EKB FRP 1 (OPN)	3	2016	3	2016

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604264N / *Air Crew Systems Development*	**Project (Number/Name)** 0606 / *Aircrew System Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Milestones: Deliveries: EKB FRP 1 Qty 2675	3	2016	4	2016
Enhanced Visual Acuity (EVA)				
Acquisition Milestones: Milestones: EVA Milestone B	3	2018	3	2018
Acquisition Milestones: Milestones: EVA Milestone C	2	2022	2	2022
System Development: Reviews: EVA PDR	2	2019	2	2019
System Development: Reviews: EVA CDR	1	2020	1	2020
System Development: Reviews: EVA TRR	1	2021	1	2021
System Development: Reviews: EVA SVR/PRR	1	2022	1	2022
Test and Evaluation: EVA Developmental Testing	3	2020	4	2021
Test and Evaluation: EVA Operational Testing	3	2022	4	2022
Production Milestones: Contract Awards: EDM (RDTEN)	3	2018	3	2018
Production Milestones: Contract Awards: EVA LRIP 1 (OPN)	2	2022	2	2022
Production Milestones: Contract Awards: EVA LRIP 2 (OPN)	4	2022	4	2022
Deliveries: EDM (QTY 12)	1	2020	3	2020
Deliveries: EVA LRIP 1 (QTY 25)	2	2022	3	2022
Deliveries: EVA LRIP 2 (QTY 100)	4	2022	4	2022

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604269N *I EA-18 Squadrons*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	1,834.153	45.384	116.761	173.488	-	173.488	152.520	68.097	68.651	53.812	Continuing	Continuing
3063: *EA-18G Development*	1,834.153	45.384	116.761	173.488	-	173.488	152.520	68.097	68.651	53.812	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 378												

A. Mission Description and Budget Item Justification

The EA-18G is replacing the EA-6B aircraft as the primary Electronic Attack platform supporting the Navy and Marine Corps, as the EA-6B is fully phased out the EA-18G will be the sole EA aircraft in the inventory. Capabilities of the EA-18G weapon system and ancillary equipment can be upgraded to accommodate and incorporate new or enhanced weapons as well as advances in technology to respond effectively to emerging future threats. E/A-18G "Flight Plan" spiral capability development is critical to the baseline of the EA-18G next generation mission system capability and maintaining tactical relevance in support of Navy Aviation Plan 2030. Development continues for design and integration of avionics systems, integration of Jamming Techniques Optimization improvements, evolutionary software upgrades via the System Configuration Set block builds and related testing. Continued advanced development engineering for improvements in reliability and maintainability are required to ensure maximum benefit is achieved through reduced cost of ownership and to provide enhanced availability.

The FY 2018 funding request was increased by $56.727M for improvements to the ALQ-218 Airborne Electronic Attack Systems Enhancements (ASE) and Integrated Capability Package (ICP)-3. This funds a combination hardware/software solution to the ALQ-218 receiver to enable low band geo-location, faster geo-location response times, improved location, identification, and probability of intercept by enabling the EA-18G to detect and identify radio frequency emitters with complex waveforms that typically are not able to be detected or identified using traditional methods. ASE provides foundational capabilities needed to support the ICP-3 passive kill chain.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	46.921	116.761	164.999	-	164.999
Current President's Budget	45.384	116.761	173.488	-	173.488
Total Adjustments	-1.537	0.000	8.489	-	8.489
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.074	0.000			
• SBIR/STTR Transfer	-1.463	0.000			
• Program Adjustments	0.000	0.000	8.378	-	8.378
• Rate/Misc Adjustments	0.000	0.000	0.111	-	0.111

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604269N *I EA-18 Squadrons*

Change Summary Explanation

Technical: FYDP Improvements to the ALQ-218 complex emitter, newly designated Airborne Electronic Attack Systems Enhancements (ASE), to significantly improve lowband geo-location, signal detection, and identification capabilities. FY18 increase to system engineering efforts to ALQ-218 requirement and realignment of Integrated Capability Package-3 requirements for execution purposes.

Schedule: Completion of the last Full Rate Production Delivery of EA-18G aircraft is scheduled for 4th Quarter FY2018 per current contractual delivery schedule.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604269N / *EA-18 Squadrons*	Project (Number/Name) 3063 / *EA-18G Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3063: *EA-18G Development*	1,834.153	45.384	116.761	173.488	-	173.488	152.520	68.097	68.651	53.812	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 378

A. Mission Description and Budget Item Justification

The EA-18G is the replacement aircraft for the EA-6B. The EA-18G development program upgrades the EA-6B's Airborne Electronic Attack capability to detect, identify, locate and suppress hostile emitters; provides enhanced connectivity to National,Theater and Strike assets; and provides organic precision emitter targeting for employment of onboard suppression weapons (High-speed Anti-Radiation Missile family) to fulfill operational requirements. The performance of the aircraft is compatible with the primary strike/fighter aircraft projected to be in the inventory, allowing it to be fully integrated into specific strike packages.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: EA-18G Design and Avionics Integration	14.164	59.799	77.725	0.000	77.725
Articles:	-	-	-	-	-

Description: The EA-18G has the capability to operate autonomously or as a major node in a network-centric operation and is being designed to perform a range of Electronic Warfare/Electronic Attack functions either simultaneously or independently. Funding will be utilized for design and integration of avionics systems into the EA-18G.

FY 2016 Accomplishments:
Continued integration of improvements developed through the Jamming Techniques Optimization teams. Addtition of ALQ-218 ASE upgrade to improve low band geo-location, signal detection, and identification capabilities necessary for complex emitter geo-location and identification.

FY 2017 Plans:
Continued integration of improvements developed through the Jamming Techniques Optimization teams. Continue and increase engineering, flight hours and test efforts for ALQ-218 ASE upgrade requirements to improve low band geo-location, signal detection, and identification capabilities necessary for complex emitter geo-location and identification. Funds will support a combined hardware/software solution to provide significant capability enhancements to the ALQ-218 which are required to address evolving threats. To incorporate those ALQ-218 ASE upgrades with the System Configuration Sets (SCS) fleet releases on EA-18G, an increase

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604269N / *EA-18 Squadrons*	**Project (Number/Name)** 3063 / *EA-18G Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
in engineering, system integration, SCS development, Operational Flight Program re-hosting, test planning, materials, lab equipment, and lab/flight testing is being funded as part of the FY17 funding increase. ***FY 2018 Base Plans:*** Continue integration of improvements developed through the Jamming Techniques Optimization teams. Continue and increase engineering, flight hours and test efforts for ALQ-218 ASE upgrade requirements to improve low band geo-location, signal detection, and identification capabilities necessary for complex emitter geo-location and identification. Funds will support a combined hardware/software solution to provide significant capability enhancements to the ALQ-218 which are required to address evolving threats. To incorporate those ALQ-218 ASE upgrades with the System Configuration Sets (SCS) fleet releases on EA-18G, an increase in engineering, system integration, SCS development, Operational Flight Program re-hosting, test planning, materials, lab equipment, and lab/flight testing is being funded as part of the FY18 funding increase. Increased funding levels added in FY18 to the EA-18G budget are to increase ALQ-218 signal processing capacity and capability, and improvement to Low-band Detection Receiver (LBDR). Capability enhancements enable detection and correct identification of modern radars. Capacity improvements provide increased signal processing in current day dense electromagnetic environments. ***FY 2018 OCO Plans:*** N/A					
Title: EA-18G Software Development	10.204	13.065	15.387	0.000	15.387
Articles:	-	-	-	-	-
Description: Continued capability enhancements to improve the EA-18G Airborne Electronic Attack capabilities are predominantly realized through evolutionary software upgrades. Funding will be utilized to develop improved software capabilities for the EA-18G through System Configuration Set block software updates. ***FY 2016 Accomplishments:*** Continued System Configuration Set block software development and integration for the EA-18G, specifically System Configuration Set builds 29C, 31C, H14 and H16. ***FY 2017 Plans:*** Continued System Configuration Set block software development and integration for the EA-18G, specifically System Configuration Set builds H14 and H16. Additional funds added for continuance of Integrated Capability Package-3 requirements. Increase to engineering efforts for integration of active and passive kill chain capabilities and sensors. Multi System Integration algorithm and sensor developmental efforts also increase at					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604269N / *EA-18 Squadrons*	**Project (Number/Name)** 3063 / *EA-18G Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
test activities for ongoing modeling and simulation upgrades such as Net Enabled Weapon Controller Interface Model interoperability software and equipment, and Live Virtual Construct interoperability efforts. ***FY 2018 Base Plans:*** Continue System Configuration Set block software development and integration for the EA-18G, specifically System Configuration Set builds H14 and H16. Additional funds added for continuance of Integrated Capability Package-3 requirements. Increase to engineering efforts for integration of active and passive kill chain capabilities and sensors. Multi System Integration algorithm and sensor developmental efforts also increase at test activities for ongoing modeling and simulation upgrades such as Net Enabled Weapon Controller Interface Model interoperability software and equipment, and Live Virtual Construct interoperability efforts. ***FY 2018 OCO Plans:*** N/A					
Title: EA-18G Developmental & Operational Testing ***Articles:*** ***Description:*** Funding will be utilized to support required test phases of the EA-18G. ***FY 2016 Accomplishments:*** Continued operational and integration test of EA-18G avionics upgrades and System Configuration Set block software updates to include Flight Tests conducted in conjunction with various Fleet Exercises (i.e. FLEX-1X). ***FY 2017 Plans:*** Continued operational and integration test of EA-18G avionics upgrades and System Configuration Set block software updates to include Flight Tests conducted in conjunction with various Fleet Exercises (i.e. FLEX-1X). ***FY 2018 Base Plans:*** Continue operational and integration test of EA-18G avionics upgrades and System Configuration Set block software updates to include Flight Tests conducted in conjunction with various Fleet Exercises (i.e. FLEX-1X). ***FY 2018 OCO Plans:*** N/A	3.100 -	5.417 -	5.481 -	0.000 -	5.481 -
Title: EA-18G Flight Plan Engineering / System Configuration Set Development and Integration ***Articles:***	17.816 -	38.380 -	74.795 -	0.000 -	74.795 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604269N / *EA-18 Squadrons*	**Project (Number/Name)** 3063 / *EA-18G Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: EA-18G "Flight Plan" spiral capability development is critical to the baseline of the Growler next generation mission system capability. Funding will support the development, test and integration efforts required to maintain tactical relevance in support of Navy Aviation Plan 2030. ***FY 2016 Accomplishments:*** Flight Plan Engineering efforts to include EA-18G improvements necessary for Growler relevance and tactical supremacy; Navy Integrated Fire Control-Counter Air system configuration set requirements to support Navy Integrated Air and Missile Defense capability requirements and enhance EA-18G Cooperative Engagement Capability. Funding supports development (hardware and software), test and integration efforts for Flight Plan requirements such as Distributed Targeting Processor-Networked to include Aided Target Recognition, Stationary Target Recognition, Maritime Multiple Target Track and Engagement, Multi-Level Security, Strike Accelerator and Advanced Tactical Data Link; Display Improvements for enhanced sensor integration; Tactical Targeting Network Technology internet protocol capability; Precision Approach and Landing Capability; Flight Path Control (Magic Carpet); Time Difference Of Arrival in support of Integrated Capability Package-3, and continued updates to Wingman Compatability improvements. ***FY 2017 Plans:*** Flight Plan Engineering efforts to include EA-18G improvements necessary for Growler relevance and tactical supremacy; Navy Integrated Fire Control-Counter Air system configuration set requirements to support Navy Integrated Air and Missile Defense capability requirements and enhance EA-18G Cooperative Engagement Capability. Funding supports development (hardware and software), test and integration efforts for Flight Plan requirements such as Distributed Targeting Processor-Networked to include Aided Target Recognition, Stationary Target Recognition, Maritime Multiple Target Track and Engagement, Multi-Level Security, Strike Accelerator and Advanced Tactical Data Link; Display Improvements for enhanced sensor integration; Tactical Targeting Network Technology internet protocol capability; Precision Approach and Landing Capability; Flight Path Control (Magic Carpet); Time Difference Of Arrival in support of Integrated Capability Package-3, and continued updates to Wingman Compatibility improvements. Additional funding was realigned from PU 1662 F/A-18 Improvements line for proper execution of EA-18G specific ICP-3 requirements. ***FY 2018 Base Plans:*** Flight Plan Engineering efforts to include EA-18G improvements necessary for Growler relevance and tactical supremacy; Navy Integrated Fire Control-Counter Air system configuration set requirements to support Navy Integrated Air and Missile Defense capability requirements and enhance EA-18G Cooperative Engagement Capability. Funding supports development (hardware and software), test and integration efforts for Flight					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604269N / *EA-18 Squadrons*	**Project (Number/Name)** 3063 / *EA-18G Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Plan requirements such as Distributed Targeting Processor-Networked to include Aided Target Recognition, Stationary Target Recognition, Maritime Multiple Target Track and Engagement, Multi-Level Security, Strike Accelerator and Advanced Tactical Data Link; Display Improvements for enhanced sensor integration; Tactical Targeting Network Technology internet protocol capability; Precision Approach and Landing Capability; Flight Path Control (Magic Carpet); Time Difference Of Arrival in support of Integrated Capability Package-3, and continued updates to Wingman Compatibility improvements. Additional funding was realigned from PU 1662 F/A-18 Improvements line as a technical correction for EA-18G specific ICP-3 requirements. ***FY 2018 OCO Plans:*** N/A					
Title: EA-18G Obsolescence Redesign ***Articles:*** ***Description:*** Develop and test design modifications to address obsolescence issues. ***FY 2016 Accomplishments:*** Develop and test design modifications to hardware components and software systems in response to EA-18G weapon system and ancillary equipment obsolescence issues. ***FY 2017 Plans:*** Develop and test design modifications to hardware components and software systems in response to EA-18G weapon system and ancillary equipment obsolescence issues. ***FY 2018 Base Plans:*** Develop and test design modifications to hardware components and software systems in response to EA-18G weapon system and ancillary equipment obsolescence issues. ***FY 2018 OCO Plans:*** N/A	0.100 -	0.100 -	0.100 -	0.000 -	0.100 -
Accomplishments/Planned Programs Subtotals	45.384	116.761	173.488	0.000	173.488

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/014300: *EA-18G*	659.998	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	12,707.707

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604269N / *EA-18 Squadrons*	**Project (Number/Name)** 3063 / *EA-18G Development*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/05250: *F-18 Series (OSIP 011-10)*	11.919	22.632	34.804	-	34.804	46.905	59.626	80.890	67.458	30.635	443.235
• RDTEN/1662: *F/A-18 Improvement*	106.905	67.886	69.759	-	69.759	61.510	50.431	52.133	53.201	Continuing	Continuing

Remarks

D. Acquisition Strategy

The program achieved Full Rate Production in November 2009. Contractual studies are underway for Operational Requirement Document core Block II activities and those efforts will be integrated into the overall EA-18G plan/roadmap as resources permit. EA-18G software upgrades are incrementally developed, integrated and fielded. Software development and integration are coordinated efforts between government activities and industry partners to field capability upgrades to the EA-18G fleet.

E. Performance Metrics

Completion of last Full Rate Production Delivery of EA-18G aircraft scheduled for 4th Quarter FY2018.

Complete incorporation of EA-18G specific upgrades into the System Configuration Set block software builds to meet planned Fleet Release dates.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604269N / *EA-18 Squadrons*	**Project (Number/Name)** 3063 / *EA-18G Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering (System Configuration Set / Software)	WR	NAWCAD : Pax River, MD	33.705	1.000	Nov 2015	5.489	Dec 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering (SCS/Flight Plan)	WR	NAWCWD : China Lake, CA	90.728	11.889	Feb 2016	14.701	Dec 2016	12.933	Dec 2017	-		12.933	Continuing	Continuing	Continuing
Systems Engineering (SCS/Flight Plan)	WR	NAWCWD : Pt. Mugu, CA	74.604	7.512	Jan 2016	7.522	Dec 2016	24.607	Dec 2017	-		24.607	Continuing	Continuing	Continuing
Systems Engineering (SCS/SW)	WR	NAWCAD : North Island, CA	0.000	0.000		0.050	Dec 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering (Flight Plan DTP-N)	Various	Boeing : St. Louis	0.000	0.000		15.525	Mar 2017	67.979	Mar 2018	-		67.979	Continuing	Continuing	Continuing
Systems Engineering (JATO)	WR	NAVSEASYSCOM : Washington, DC	5.314	0.250	Feb 2016	0.000		0.000		-		0.000	0.000	5.564	-
Systems Engineering (JATO/ALQ-218 ASE)	WR	Naval Research Laboratory : Washington, DC	2.922	0.200	Feb 2016	0.000		0.000		-		0.000	0.000	3.122	-
System Engineering (ALQ-218 ASE)	C/CPFF	Northrop Grumman : Various	0.000	13.274	Feb 2016	56.385	Apr 2017	14.340	Apr 2018	-		14.340	Continuing	Continuing	Continuing
System Engineering (Flight Plan TDOA)	C/CPFF	Boeing : St. Louis	0.000	1.366	Dec 2015	2.719	Dec 2016	6.954	Dec 2017	-		6.954	Continuing	Continuing	Continuing
Systems Engineering (SCS/Flight Plan)	WR	NSMA : Various	0.000	0.000		2.500	Apr 2017	0.250	Apr 2018	-		0.250	0.000	2.750	-
Systems Engineering (TDOA)	C/CPFF	Northrop Grumman : Various	0.000	0.000		0.000		10.973	Dec 2017	-		10.973	0.000	10.973	10.973
Systems Engineering (ALQ-218 ASE)	C/CPFF	Boeing : Various	0.000	0.000		0.000		12.000	Apr 2018	-		12.000	0.000	12.000	12.000
Systems Engineering (ALQ-218 LBDR)	WR	NAWCWD : Pr. Mugu, Ca	0.000	0.000		0.000		1.000	Dec 2017	-		1.000	0.000	1.000	-
Systems Engineering (ALQ-218 LBDR)	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		1.000	Dec 2017	-		1.000	0.000	1.000	-
Systems Engineering (ALQ-218 LBDR)	C/IDIQ	Northrop Grumman : Various	0.000	0.000		0.000		6.925	Dec 2017	-		6.925	0.000	6.925	-
Systems Engineering (ALQ-218 LBDR)	C/IDIQ	Boeing : Various	0.000	0.000		0.000		1.000	Dec 2017	-		1.000	0.000	1.000	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604269N / *EA-18 Squadrons*	Project (Number/Name) 3063 / *EA-18G Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Prod Dev no longer funded in FYDP	Various	Various : Various	1,093.867	0.000		0.000		0.000		-		0.000	0.000	1,093.867	-
		Subtotal	1,301.140	35.491		104.891		159.961		-		159.961	-	-	-

Remarks

FY18 increase for ALQ-218 ASE and Low-Band Detection Receiver support for Systems Engineering, improvement, design and integration efforts, also a funding re-alignment for execution of Integrated Capability Package-3 requirements from PU1662.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Obsolescence Redesign	Various	Various : Various	0.180	0.100	Jun 2016	0.100	Jun 2017	0.100	Jun 2018	-		0.100	Continuing	Continuing	Continuing
Flight Plan Engineering/ SCS Development and Integration	Various	Various : Various	0.000	4.239	Dec 2015	3.881	Dec 2016	1.537	Dec 2017	-		1.537	Continuing	Continuing	Continuing
Flight Plan: ICP-3	Various	Various : Various	0.000	0.000		0.000		1.000	Dec 2017	-		1.000	0.000	1.000	-
Prior Year Support no longer funded in FYDP	Various	Various : Various	235.789	0.000		0.000		0.000		-		0.000	0.000	235.789	-
		Subtotal	235.969	4.339		3.981		2.637		-		2.637	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integration & Operational Testing	WR	Various : Various	114.225	2.000	Jul 2016	1.500	Jun 2017	1.000	Jun 2018	-		1.000	Continuing	Continuing	Continuing
Integration & Operational Testing	WR	COTF : China Lake, CA	0.000	0.000		3.917	Dec 2016	6.819	Dec 2017	-		6.819	Continuing	Continuing	Continuing
Test Assets	C/CPFF	Raytheon : Tuscon, AZ	1.033	1.100	Nov 2015	0.000		0.000		-		0.000	0.000	2.133	2.133
Prior Year T&E no longer funded in FYDP	Various	Various : Various	106.400	0.000		0.000		0.000		-		0.000	0.000	106.400	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604269N / *EA-18 Squadrons*	Project (Number/Name) 3063 / *EA-18G Development*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	221.658	3.100		5.417		7.819		-		7.819	-	-	-

Remarks

Test Assets (AIM-120, AIM-9X) procured as live fire and E3/HERO test assets in support of EA-18G software development and weapons integration efforts specific to the EA-18G.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support (Seaport-CSS)	C/CPFF	Wyle Lab : Pax River, MD	13.955	0.616	Nov 2015	0.584	Apr 2017	0.185	Apr 2018	-		0.185	Continuing	Continuing	Continuing
Government Engineering Support	WR	NAWCAD : Pax River, MD	33.160	0.435	Nov 2015	0.432	Dec 2016	0.435	Dec 2017	-		0.435	Continuing	Continuing	Continuing
Program Management Support	WR	NAWCAD : Pax River, MD	23.225	0.283	Nov 2015	0.300	Dec 2016	0.337	Dec 2017	-		0.337	Continuing	Continuing	Continuing
Flight Plan Engineering / System Configuration Set Development & Integration	WR	NAWCAD : Pax River, MD	0.700	0.750	Nov 2015	0.750	Dec 2016	0.750	Dec 2017	-		0.750	Continuing	Continuing	Continuing
Flight Plan Engineering / System Configuration Set Development & Integration	WR	NAWCWD : China Lake, CA	0.300	0.320	Nov 2015	0.320	Dec 2016	0.424	Dec 2017	-		0.424	Continuing	Continuing	Continuing
Travel	WR	Various : Various	2.705	0.050	Nov 2015	0.086	Dec 2016	0.940	Dec 2017	-		0.940	Continuing	Continuing	Continuing
Prior Year Mgmt Svcs no longer funded in FYDP	Various	Various : Various	1.341	0.000		0.000		0.000		-		0.000	0.000	1.341	-
		Subtotal	75.386	2.454		2.472		3.071		-		3.071	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,834.153	45.384		116.761		173.488		-		173.488	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604269N / *EA-18 Squadrons*	**Project (Number/Name)** 3063 / *EA-18G Development*

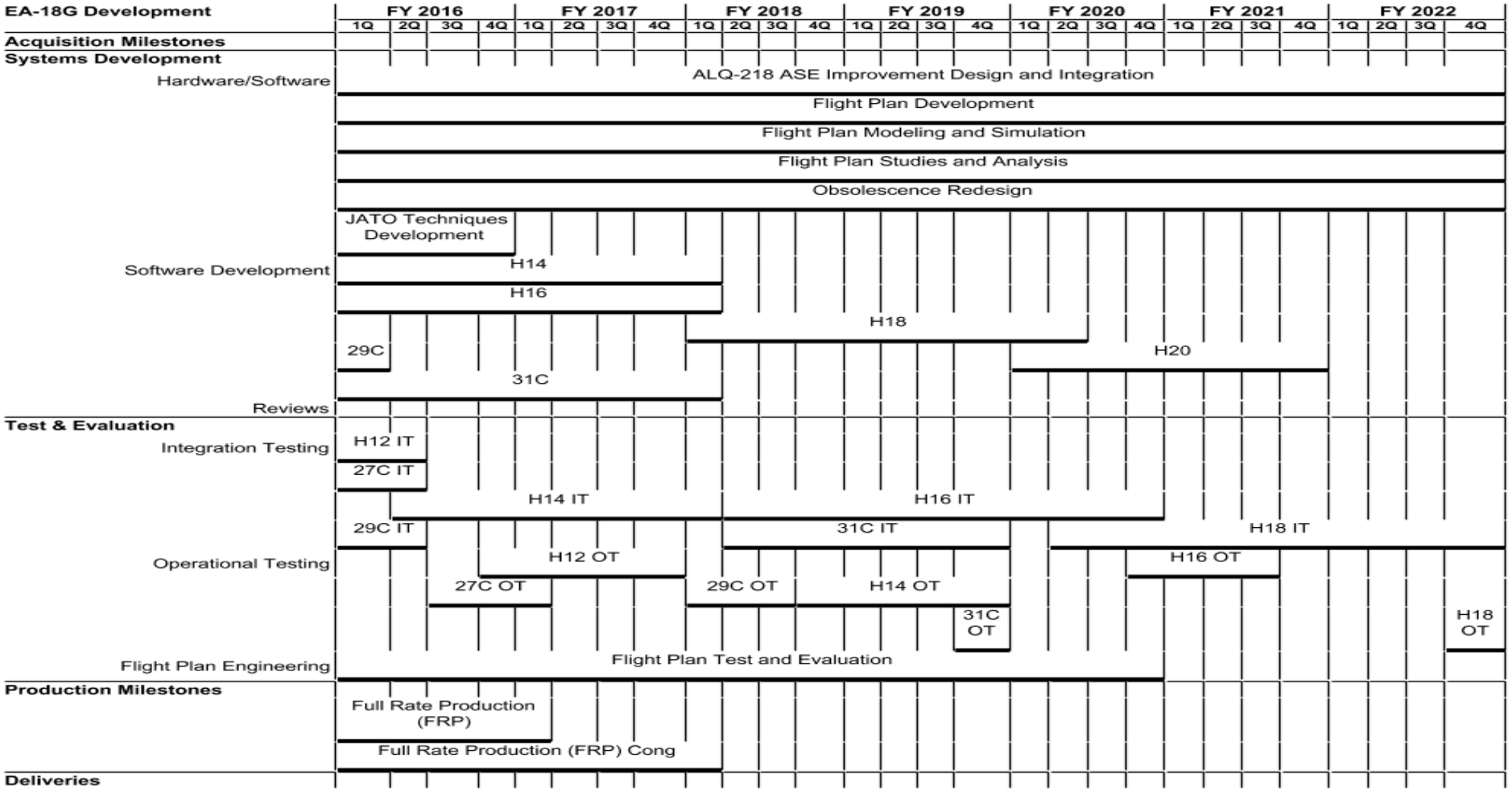
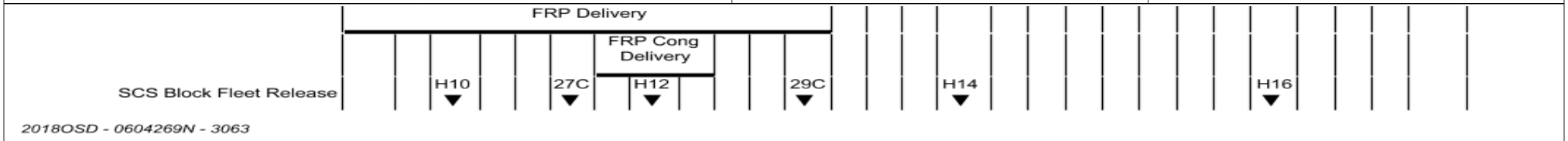


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604269N / *EA-18 Squadrons*	**Project (Number/Name)** 3063 / *EA-18G Development*



2018OSD - 0604269N - 3063

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604269N / *EA-18 Squadrons*	**Project (Number/Name)** 3063 / *EA-18G Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
EA-18G Development				
Systems Development: Hardware/Software: ALQ-218 ASE Improvement Design and Integration	1	2016	4	2022
Systems Development: Hardware/Software: Flight Plan Development	1	2016	4	2022
Systems Development: Hardware/Software: Flight Plan Modeling and Simulation	1	2016	4	2022
Systems Development: Hardware/Software: Flight Plan Studies and Analysis	1	2016	4	2022
Systems Development: Hardware/Software: Obsolescence Redesign Development and Testing	1	2016	4	2022
Systems Development: Hardware/Software: JATO Techniques Development	1	2016	4	2016
Systems Development: Software Development: H14 Software Development	1	2016	1	2018
Systems Development: Software Development: H16 Software Development	1	2016	1	2018
Systems Development: Software Development: H18 Software Development	1	2018	2	2020
Systems Development: Software Development: H20 Software Development	1	2020	4	2021
Systems Development: Software Development: 29C Software Development	1	2016	1	2016
Systems Development: Software Development: 31C Software Development	1	2016	1	2018
Test & Evaluation: Integration Testing: H12 Integration Testing	1	2016	2	2016
Test & Evaluation: Integration Testing: 27C Integration Testing	1	2016	2	2016
Test & Evaluation: Integration Testing: H14 Integration Testing	2	2016	1	2018
Test & Evaluation: Integration Testing: H16 Integration Testing	2	2018	4	2020
Test & Evaluation: Integration Testing: H18 Integration Testing	2	2020	4	2022
Test & Evaluation: Integration Testing: 29C Integration Testing	1	2016	2	2016
Test & Evaluation: Integration Testing: 31C Integration Testing	2	2018	4	2019
Test & Evaluation: Operational Testing: H12 Operational Testing	4	2016	4	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604269N / *EA-18 Squadrons*	**Project (Number/Name)** 3063 / *EA-18G Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test & Evaluation: Operational Testing: H16 Operational Testing	4	2020	3	2021
Test & Evaluation: Operational Testing: 27C Operational Testing	3	2016	1	2017
Test & Evaluation: Operational Testing: H14 Operational Testing	4	2018	4	2019
Test & Evaluation: Operational Testing: 29C Operational Testing	1	2018	3	2018
Test & Evaluation: Operational Testing: 31C Operational Testing	4	2019	4	2019
Test & Evaluation: Operational Testing: H18 Operational Testing	4	2022	4	2022
Test & Evaluation: Flight Plan Engineering: Developmental, Integration and Operational Testing	1	2016	4	2020
Production Milestones: Full Rate Production	1	2016	1	2017
Production Milestones: Full Rate Production - Congressional add	1	2016	1	2018
Deliveries: FRP Delivery	1	2016	4	2018
Deliveries: FRP Cong Delivery	3	2017	1	2018
Deliveries: SCS Block Fleet Release: H10 Fleet Release	3	2016	3	2016
Deliveries: SCS Block Fleet Release: H12 Fleet Release	4	2017	4	2017
Deliveries: SCS Block Fleet Release: H16 Fleet Release	4	2021	4	2021
Deliveries: SCS Block Fleet Release: 27C Fleet Release	2	2017	2	2017
Deliveries: SCS Block Fleet Release: 29C Fleet Release	4	2018	4	2018
Deliveries: SCS Block Fleet Release: H14 Fleet Release	4	2019	4	2019

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604270N *I Electronic Warfare (EW) Dev*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	942.861	22.383	92.766	54.055	-	54.055	51.563	42.199	34.631	34.296	Continuing	Continuing
0556: *EW Counter Response*	462.089	11.702	15.389	16.433	-	16.433	17.647	18.024	18.412	18.979	Continuing	Continuing
1742.: *EW Technical Development and T&E*	1.112	1.570	1.585	1.106	-	1.106	1.892	1.832	1.677	1.711	Continuing	Continuing
2175: *Tactical Air Electronic Warfare*	479.660	9.111	3.927	2.097	-	2.097	2.079	2.105	0.000	0.000	0.000	498.979
3308: *Technology Development*	0.000	0.000	2.016	2.286	-	2.286	6.309	6.373	8.669	8.841	Continuing	Continuing
3309: *Assault Survivability Optimization*	0.000	0.000	3.375	0.851	-	0.851	0.843	0.844	0.866	0.884	Continuing	Continuing
3327: *MAGTF EW Aviation Development*	0.000	0.000	64.817	29.643	-	29.643	21.846	12.053	4.017	2.869	Continuing	Continuing
3371: *MAGTF EW Interoperability Development*	0.000	0.000	1.657	1.639	-	1.639	0.947	0.968	0.990	1.012	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 418												

A. Mission Description and Budget Item Justification

This program element includes development of Electronic Warfare (EW) systems for the United States Navy (USN), United States Marine Corps (USMC), and United States Army tactical aircraft, USMC helicopters, surface combatants, data link vulnerability assessments, precision targeting, USN and USMC radio frequency jammers, and development and testing of electronic warfare devices for emerging threats and emergency contingencies. This element also includes development of Aircraft Survivability Equipment (ASE) and Electronic Warfare (EW)/countermeasures solutions for the USN, USMC and Coalition Aircraft to include studies and evaluations of current and future aircraft threats, modeling and simulation for improved countermeasure capabilities, and development and testing to address new and emerging threats.

This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

PE 0604279N and PE 0604376M consolidated to PE 0604270N beginning in FY 2017.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604270N *I Electronic Warfare (EW) Dev*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	20.113	48.766	45.809	-	45.809
Current President's Budget	22.383	92.766	54.055	-	54.055
Total Adjustments	2.270	44.000	8.246	-	8.246
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.578	0.000			
• SBIR/STTR Transfer	-0.307	0.000			
• Program Adjustments	0.000	44.000	8.413	-	8.413
• Rate/Misc Adjustments	-0.001	0.000	-0.167	-	-0.167

Change Summary Explanation

Technical: Not Applicable.

Schedule:
Project Unit 0556 / EW COUNTER RESPONSE: N/A

Project Unit 1742 / EW Technical Development and T&E: N/A

Project Unit 2175 / Tactical Air Electronic Warfare: Software Improvement (SWIP) Initial Operational Capability (IOC) completion changed from 4th Qtr. FY 2017 to 2nd Qtr. FY 2018 due to delays in software maturation and progression. SWIP Developmental Testing/Integrated Testing DT/IT completion changed from 4th Qtr. FY 2016 to 2nd Qtr. FY 2017 due to delays in software maturation and progression.

Project Unit 3308 / Technology Development: N/A

Project Unit 3309 / Assault Survivability Optimization: FY 2017 flight test changed from 2nd/3rd Qtr to 3rd/4th Qtr due to aircraft and test range availability. FY17 Test MDF changed from 2nd Qtr to 3rd Qtr to align with flight test.

Project Unit 3327 / MAGTF EW Aviation Development: Intrepid Tiger II (AN/ALQ-231) BLK X radar jammer schedule adjusted to reflect late receipt of Science and Technology (S&T) funding in FY 2016 and impact of Congressional Mark on S&T funding. AN/ALQ-231(V)1 BLK X In-Progress Review (IPR) renamed to AN/ALQ-231(V)1 BLK X Functional Configuration Audit / System Verification Review (FCA/SVR) and re-aligned from 3rd Qtr. FY 2018 to 1st Qtr. FY 2019. AN/ALQ-231(V)1 BLK X Technical Directive Fleet Release (TD Flt Rel) moved from 2nd Qtr. FY 2019 to 2nd Qtr. FY 2020. AN/ALQ-231 BLK X Hardware

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604270N *I Electronic Warfare (EW) Dev*

Development end date changed from 4th Qtr. FY 2021 to 2nd Qtr. FY 2020. AN/ALQ-231(V)1 BLK X Software Development (SW Dev) start moved from 1st Qtr. FY 2017 to 3rd Qtr. FY 2017 and completion moved from 4nd Qtr. FY 2017 to 2nd Qtr. FY 2019 to reflect impact of effort remaining unfunded in FY 2016. AN/ALQ-231(V)1 BLK X Development Test/Performance Test (DT/Performance Test) start date was realigned from 2nd Qtr. FY 2017 to 3rd Qtr. FY 2018 with the completion date sliding from 2nd Qtr. FY 2018 to 1st Qtr. FY 2019. AN/ALQ-231(V)1 BLK X Initial Operational Test & Evaluation (IOT&E) was renamed to AN/ALQ-231(V)1 BLK X Operational Test & Evaluation (OT&E) and the start date slid from 4th Qtr. FY18 to 2nd Qtr. FY 2019 and the completion date slid from 1st Qtr. FY 2019 to 4th Qtr. FY 2019. AN/ALQ-231(V)1 BLK X Lot 1 delivery start date moved from 4th Qtr. FY 2019 to 4th Qtr. FY 2021 and end date moved from 3rd Qtr. FY 2020 to 3rd Qtr. FY 2022. AN/ALQ-231(V)1 BLK X Lot 2 delivery start date moved from 4th Qtr. FY 2020 to 4th Qtr. FY 2022.

Schedules and projects adjusted including AN/ALQ-231(V)3 UH-1 Jettison Capability, Electronic Warfare Services Architecture (EWSA), Marine Air Ground Tablet (MAGTAB) Integration with AN/ALQ-231(V), MAGTF EW Jammer Techniques Development, KC-130 Integration for AN/ALQ-231(V)1 Block 1 Communications Jammer, and Electronic Warfare (EW) Range Improvements and Upgrades.

Project Unit 3371 / MAGTF EW Interoperability Development: N/A

Project Units 3308, 3309, 3327, and 3371 were incorporated into PE 0604270N in President's Budget 2017.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 0556 / *EW Counter Response*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0556: *EW Counter Response*	462.089	11.702	15.389	16.433	-	16.433	17.647	18.024	18.412	18.979	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops upgrades to combat the increasingly complex and dense Electronic Warfare (EW) threat environment. Required improvements in Airborne Electronic Attack (AEA) will achieve application of state-of-the-art signal exploitation, processing, display techniques, improved tactics, and jamming capabilities against EW threats.

Efforts include continued development of Force Protection/Overseas Contingency Operations (classified discussion available upon request) Navigation and Information Operations applications and enhanced communications jamming. Efforts also include risk reduction activities to support the upgrade of the AN/ALQ-99 Tactical Jamming System (TJS) capabilities to include technology studies, breadboard/demonstrator development, and testing in laboratory and relevant environments. The efforts under this project provide for electronic countermeasure responses to advanced threat weapon systems and Command, Control, and Communications (C3) networks that are expanding in density and technical complexity. This project funds the continued development and integration of all EW and Electronic Attack systems for the US Navy electronic attack aircraft including improvements within precision Direction of Arrival, geo-location, Specific Emitter Identification, Auto-Electronic Support Measures, and selective reactive jamming.

Electronic Attack Jammer Techniques Optimization (JATO) and test support is required to address and counter new and evolving radar and communications threats in support of existing and emerging systems such as the EA-6B, EA-18G, and Next Generation Jammer (NGJ). JATO will continue to generate techniques, tactics, and procedures that will optimize the capabilities of existing weapon systems, and to assist in requirements definitions of emerging AEA systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: JAMMER TECHNIQUES OPTIMIZATION (JATO)	11.400	15.389	16.433	0.000	16.433
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued engineering development and test support of existing and emerging systems such as the EA-6B, EA-18G, and NGJ to address potential Radio Frequency (RF) and Cyber Electronic Warfare (Cyber/EW) effects on current and evolving radar/communications threats. JATO continued to generate techniques, tactics, and procedures to optimize the capabilities of systems such as, but not limited to, the AN/ALQ-99, USQ-113, ALQ-218, ALQ-227, AN/ALQ-231, ALE-43, and Airborne Electronic Attack Expendable (AEAE) systems; and assist in requirements definitions of emerging Airborne Electronic Attack (AEA) systems. JATO continued to lead					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
efforts in support of Overseas Operations and Force Protection issues. (Classified discussion available upon request). ***FY 2017 Plans:*** The JATO organization will continue engineering development and test support of existing and emerging systems such as the EA-6B, EA-18G, and NGJ to address potential RF and Cyber Electronic Warfare (Cyber/EW) effects on current and evolving radar/communications threats. Jammer Techniques Optimization (JATO) will continue to generate techniques, tactics, and procedures to optimize the capabilities of systems such as, but not limited to, the AN/ALQ-99, USQ-113, ALQ-218, ALQ-227, AN/ALQ-231, ALE-43, and Airborne Electronic Attack Expendable (AEAE) systems; and assist in requirements definitions of emerging Airborne Electronic Attack (AEA) systems. JATO continues to lead efforts in support of Overseas Operations and Force Protection issues. (Classified discussion available upon request). Increase in funding from FY 2016 to FY 2017 is due to increased flight and ground testing against adversary systems and increased efforts of the Advanced Techniques Group (ATG) to address Cyber/EW threats. ***FY 2018 Base Plans:*** The JATO organization will continue engineering development and test support of existing and emerging systems such as the EA-6B, EA-18G, and Next Generation Jammer to address potential Radio Frequency (RF) and Cyber/EW effects on current and evolving radar/communications threats. JATO will continue to generate techniques, tactics, and procedures to optimize the capabilities of systems such as, but not limited to, the AN/ALQ-99, USQ-113, ALQ-218, ALQ-227, AN/ALQ-231, ALE-43; and assist in requirements definitions of emerging AEA systems. JATO continues to lead efforts in support of Overseas Operations and Force Protection issues. (Classified discussion available upon request). Increase in funding from FY 2017 to FY 2018 is required to support additional testing requirements for developmental Electronic Warfare (EW) systems, and to provide increased flight and ground testing against adversary systems. Additionally, funds will provide for increased efforts of the Advanced Techniques Group (ATG) to address Cyber/EW threats. ***FY 2018 OCO Plans:*** N/A					
Title: AIRBORNE ELECTRONIC ATTACK EXPENDABLE (AEAE)	0.302	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Continued risk reduction efforts including evaluation of Electronic Warfare payload(s) for integration into AEAE platform. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	11.702	15.389	16.433	0.000	16.433

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0511: *EA-6 Series*	7.738	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3,394.382
• APN/0513: *AEA Systems*	36.233	51.900	52.960	-	52.960	46.982	50.936	70.403	71.807	172.893	797.960

Remarks

D. Acquisition Strategy

The Jammer Techniques Optimization Group (JATO), comprised of a partnership between the Government and a University Aligned Research Center, continues to research Electronic Warfare tactics and techniques. The JATO prime delivery order, a cost plus fixed fee contract that covers the period of FY 2013 through FY 2017, was awarded to Johns Hopkins University in 3Qtr. FY 2013. A follow-on contract for JATO prime research efforts is planned to award prior to the end of FY 2017.

E. Performance Metrics

1. Jammer Techniques Optimization development counters enemy radar systems and communication systems to provide techniques to protect allied forces.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary HDW Develop - ICAP III	C/FFP	Various : Various	262.104	0.000		0.000		0.000		-		0.000	0.000	262.104	262.104
Systems Engineering NRL	WR	Naval Research Lab : Maryland	10.347	1.700	Dec 2015	1.606	Nov 2016	1.635	Nov 2017	-		1.635	Continuing	Continuing	Continuing
Systems Engineering NAWCAD	WR	NAWCAD : Patuxent River, MD	24.741	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering NAWCWD	WR	NAWCWD : Point Mugu, CA	82.052	4.763	Nov 2015	4.376	Nov 2016	4.642	Nov 2017	-		4.642	Continuing	Continuing	Continuing
Systems Engineering NSWC	WR	NSWC Det : Crane, IN	10.711	0.210	Dec 2015	0.625	Nov 2016	0.675	Nov 2017	-		0.675	Continuing	Continuing	Continuing
Systems Engineering VAR	WR	Various : Various	14.893	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior Year Development cost no longer Funded in the FYDP	Various	Various : Various	1.043	0.000		0.000		0.000		-		0.000	0.000	1.043	1.043
		Subtotal	405.891	6.673		6.607		6.952		-		6.952	-	-	-

Remarks

Growth in excess of inflation indices in FY 2018 is due to increased efforts related to flight testing.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - Jammer Techniques Optimization (JATO)	SS/CPFF	Johns Hopkins Unv : Maryland	35.504	4.025	Dec 2015	4.744	Nov 2016	4.838	Nov 2017	-		4.838	Continuing	Continuing	Continuing
Eng & Tech Srvc (Non FFRDC)	Various	Various : Various	17.061	0.941	Dec 2015	1.833	Nov 2016	1.869	Nov 2017	-		1.869	Continuing	Continuing	Continuing
Prior year Support costs no longer funded in the FYDP	Various	Various : Various	2.256	0.000		0.000		0.000		-		0.000	0.000	2.256	-
		Subtotal	54.821	4.966		6.577		6.707		-		6.707	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Jammer Techniques Optimization (JATO) Flight Test	WR	NAWCWD : Point Mugu, CA	0.000	0.000		1.556	Nov 2016	2.091	Nov 2017	-		2.091	Continuing	Continuing	Continuing
JATO Ground/Lab Test	WR	NAWCWD : Point Mugu, CA	0.000	0.000		0.519	Nov 2016	0.553	Nov 2017	-		0.553	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		2.075		2.644		-		2.644	-	-	-

Remarks

Jammer Techniques Optimization (JATO) Flight and Ground/Lab Tests broken out separately from Systems Engineering efforts for budget clarity in FY 2017. These lines will fund tests of JATO techniques, tactics, and procedures (TTPs) against real and simulated adversary systems. FY 2018 includes an additional two JATO Flight Tests over budgeted efforts in FY 2017.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	Various : Various	1.226	0.009	Oct 2015	0.030	Oct 2016	0.030	Oct 2017	-		0.030	Continuing	Continuing	Continuing
Travel	WR	Various : Various	0.151	0.054	Oct 2015	0.100	Oct 2016	0.100	Oct 2017	-		0.100	Continuing	Continuing	Continuing
		Subtotal	1.377	0.063		0.130		0.130		-		0.130	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	462.089	11.702		15.389		16.433		-		16.433	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

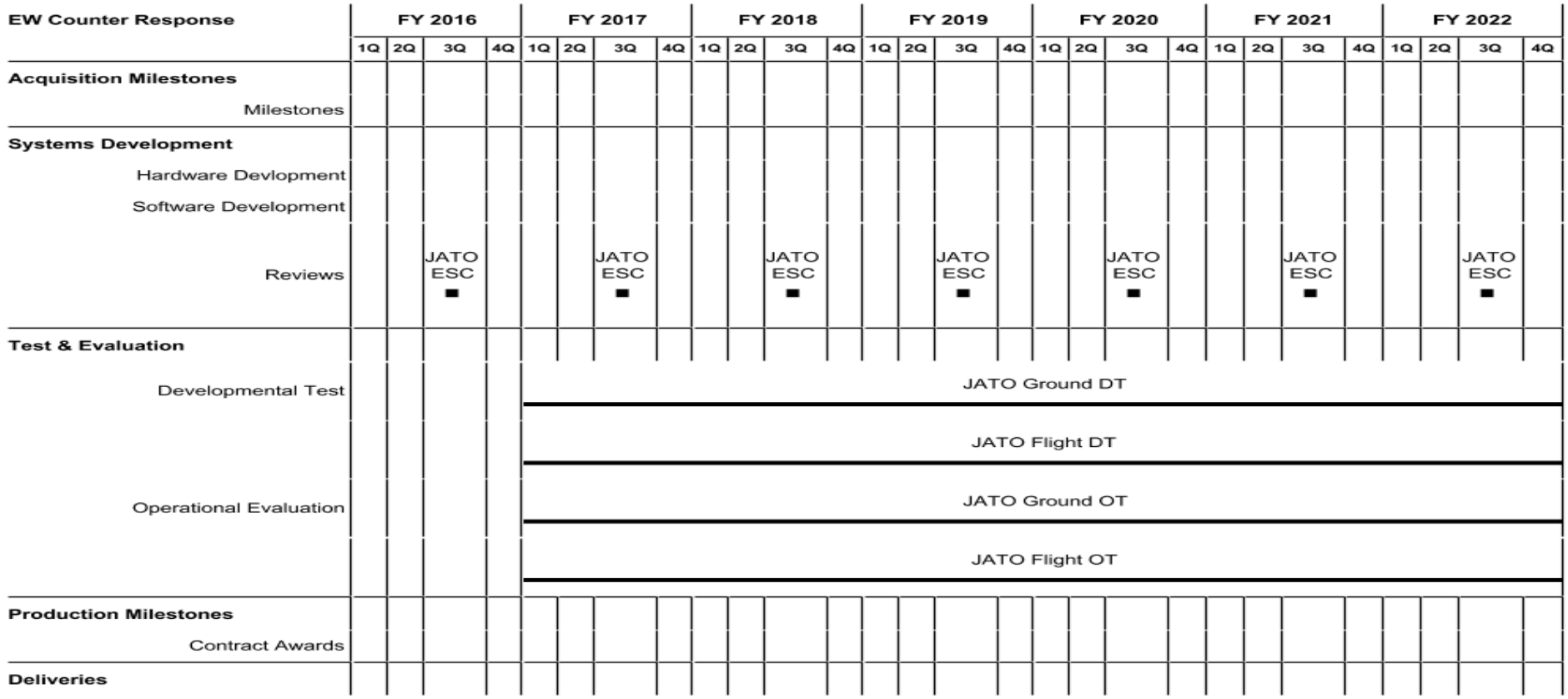

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
EW Counter Response				
Systems Development: Reviews: JATO Executive Steering Committee 2016	3	2016	3	2016
Systems Development: Reviews: JATO Executive Steering Committee 2017	3	2017	3	2017
Systems Development: Reviews: JATO Executive Steering Committee 2018	3	2018	3	2018
Systems Development: Reviews: JATO Executive Steering Committee 2019	3	2019	3	2019
Systems Development: Reviews: JATO Executive Steering Committee 2020	3	2020	3	2020
Systems Development: Reviews: JATO Executive Steering Committee 2021	3	2021	3	2021
Systems Development: Reviews: JATO Executive Steering Committee 2022	3	2022	3	2022
Test & Evaluation: Developmental Test: JATO Ground Developmental Test	1	2017	4	2022
Test & Evaluation: Developmental Test: JATO Flight Developmental Test	1	2017	4	2022
Test & Evaluation: Operational Evaluation: JATO Ground Operational Test	1	2017	4	2022
Test & Evaluation: Operational Evaluation: JATO Flight Operational Test	1	2017	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 1742. / *EW Technical Development and T&E*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1742.: *EW Technical Development and T&E*	1.112	1.570	1.585	1.106	-	1.106	1.892	1.832	1.677	1.711	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program element includes development of Electronic Warfare (EW) systems for the United States Navy (USN), United States Marine Corps (USMC), and United States Army tactical aircraft, USMC helicopters, surface combatants, data link vulnerability assessments, precision targeting, USN and USMC radio frequency jammers, and development and testing of electronic warfare devices for emerging threats and emergency contingencies.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Electronic Warfare Technical Development Studies and Test & Evaluation	1.570	1.585	1.106	0.000	1.106
Articles:	-	-	-	-	-
Description: This project funds efforts that focus on the quick reaction prototyping of tactical information and electronic warfare systems.					
FY 2016 Accomplishments: *Performed studies and vulnerability analysis on emerging/changing threats/targets for EW programs. *Researched and analyzed emerging/evolving Signal of Interests (SOIs) for vulnerabilities to EW systems. *Developed, tested, evaluated and integrated custom-made wave forms into MCS-21 systems for employment against specific adversary SOIs *Provided specialized technical engineering expertise, systems engineering, and signal propagation/RF studies. *Use modeling and simulation to design and optimize antenna designs					
FY 2017 Plans: *Continue studies and vulnerability analysis on emerging/changing threats/targets for EW programs. Assess vulnerabilities in adversary systems and signals with the purpose of developing countermeasures to create commanders desired effects Realize vulnerability in order to develop and integrate specific wave forms into MCS-21 systems. *Provide hardware prototyping and testing. *Provide support for test plan development, antenna/platform integration, testing, and post-test analyses					
FY 2018 Base Plans: *Continue studies and vulnerability analysis on emerging/changing threats/targets for EW programs.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 1742. / *EW Technical Development and T&E*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
*Assess vulnerabilities in adversary systems and signals with the purpose of developing countermeasures to create commanders desired effects. *Realize vulnerability in order to develop and integrate specific wave forms into MCS-21 systems. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.570	1.585	1.106	0.000	1.106

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

BSO 60: Development of classified prototypes and special capabilities. The Navy Cyber Warfare Development Group (NCWDG) is granted streamlined acquisition authority for the development of classified prototypes and special capabilities under the DASN(C4I).

E. Performance Metrics

BSO 60: Research, assess and develop EW/IW capabilities. The NCWDG serves as the Program Management Office of the EW Technical Development and Information Warfare (IW) program. As such, NCWDG is tasked as the Navy's principal technical agent to research, assess, and develop EW/IW capabilities.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 2175 / *Tactical Air Electronic Warfare*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2175: *Tactical Air Electronic Warfare*	479.660	9.111	3.927	2.097	-	2.097	2.079	2.105	0.000	0.000	0.000	498.979
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 418

A. Mission Description and Budget Item Justification

Integrated Defensive Electronic Countermeasures (IDECM) Block 3 (IB-3/ALE-55) introduced the new Fiber Optic Towed Decoy (FOTD), ALE-55, capability to the IDECM Block 2 Electronic Warfare (EW) suite as a replacement for the ALE-50 decoy. The FOTD, when integrated with the rest of the F/A-18E/F EW suite (i.e., ALQ-214, ALR-67(V)3, ALE-47 and ALE-50), the associated cockpit controls, displays and other avionics significantly improves the survivability of the host aircraft in a radio frequency threat environment. IB-3 MS III (Full-Rate Production Decision) was approved in the 4th Qtr. FY 2011. IB-3 Initial Operational Capability (IOC) was achieved 4th Qtr. FY 2011.

IDECM Block 4 (IB-4) is an Engineering Change Proposal (ECP) to the ALQ-214 to render it suitable for operation on F/A-18C/D aircraft (replacing the ALQ-126B and significantly improving F/A-18C/D survivability) while retaining all IDECM suite functionality when installed on F/A-18E/F aircraft. The IB-4 acquisition and contract strategy includes development of the Common On-Board Jammer for the F/A-18 C/D/E/F aircraft through sole source contract awards for modifications to the ALQ-214. IB-4, ALQ-214 ECP efforts include hardware and software design, development and test, delivery of 17 engineering development models, integration and testing on the host aircraft. The F/A-18 EW suite includes the ALR-67 Radar Warning Receiver (RWR), the ALE-47 Countermeasures Dispensing Set (CMDS), the mission computer and other avionics. In addition to performing the RWR function, the ALR-67 is the EW bus controller. The EW bus is the primary interface between the EW systems (Jammer, RWR, and CMDS). The mission computer is the avionics bus controller, the interface between the EW suite and other avionics. Production Cut-In occurred 2nd Qtr FY 2012, Initial Operational Capability (IOC) achieved May 2015.

ALQ-214 software improvement will provide the ALQ-214 with digital radio frequency memory deny-delay, technique capability significantly improving F/A-18C/D/E/F survivability. Acquisition and contract strategy includes development, integration and test of the ALQ-214 software improvements through sole-source contract award. Minor modifications to other avionics are required in order to integrate this new capability. These other avionics may include, but are not limited to, the ALR-67(V)2, ALR-67(V)3, ALE-47, ALE-50, ALE-55, mission computer and fire control radar.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Tactical Air EW	9.111	3.927	2.097	0.000	2.097
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
The ALQ-214 software improvement contract continued into FY 2016. Integrated testing for software improvement started and continued through FY 2016. ***FY 2017 Plans:*** ALQ-214 Software Improvement operational testing will begin and will continue through FY 2017. ***FY 2018 Base Plans:*** ALQ-214 Software Improvement Phase 2 Algorithm Development will begin in FY 2018 and continue into FY 2020. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	9.111	3.927	2.097	0.000	2.097

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0576 004-12: *Common On-Board Jammer*	94.087	57.568	49.976	-	49.976	47.016	47.873	48.854	49.829	278.270	932.897
• PANMC/0182: *Airborne Expendable CM*	21.723	20.905	23.534	-	23.534	24.009	24.483	24.902	25.418	Continuing	Continuing

Remarks

Airborne Expendable Countermeasures funding only includes the Active Jammer ALE-55 Fiber Optic Towed Decoy (FOTD) and associated other support.

D. Acquisition Strategy

IDECM Block 3 (IB-3) sole source award of Full-Rate Production (FRP) in FY 2013 to British Aerospace Engineering (BAE). BAE is the original developer/manufacturer and current sustainer of the ALE-55. Annual IB-3 production contracts will continue through FY 2049. IB-4 Engineering Change Proposal (ECP) and Software Improvement (SWIP) development contracts were awarded sole-source to Harris in 2009 and 2012 respectively. Harris is the original developer/manufacturer and current sustainer of the ALQ-214. Annual IB-4 production awards are planned through 2027.

E. Performance Metrics

IDECM Block 3: Successfully award ALE-55 FRP 8 option contract in 1st Qtr. FY 2018.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

IDECM Block 4: Successfully award ALQ-214 FRP 14-16 contract in 3rd Qtr. FY 2017. ALQ-214 FRP 14-16 is planned as Sole Source Fixed Price Incentive Firm (SS/FPIF) contract with a base plus 2 options to Harris.

ALQ-214 Software Improvement: Successfully achieve Initial Operational Capability in 2nd Qtr. FY 2018.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Integration - IDECM Boeing	Various	Various : Various	7.519	0.000		0.000		0.000		-		0.000	0.000	7.519	7.519
Systems Eng - IDECM	SS/CPFF	Various : Various	64.169	0.000		0.000		0.000		-		0.000	0.000	64.169	64.169
Prior Year Prod Dev costs no longer funded in FYDP	Various	Various : Various	236.024	0.000		0.000		0.000		-		0.000	0.000	236.024	-
		Subtotal	307.712	0.000		0.000		0.000		-		0.000	0.000	307.712	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Log Supt - IDECM	WR	NAWCAD : Pax River, MD	0.229	0.080	Nov 2015	0.113	Dec 2016	0.114	Nov 2017	-		0.114	0.232	0.768	-
Integrated Log Supt - IDECM	SS/CPFF	WYLE : Pax River, MD	0.050	0.000		0.000		0.000		-		0.000	0.000	0.050	0.050
Software Dev-ALQ - 214 SW Dev	SS/CPFF	Harris : Clifton, NJ	22.227	3.220	Mar 2016	0.000		0.000		-		0.000	0.000	25.447	25.447
Engineering Support	WR	Various : Various	1.912	0.383	Nov 2015	0.403	Dec 2016	1.334	Nov 2017	-		1.334	2.649	6.681	-
Engineering Support	WR	NAWCWD : China Lake, CA	0.195	1.457	Feb 2016	0.000		0.000		-		0.000	0.000	1.652	-
Engineering Support	WR	NAWCWD : Point Mugu, CA	2.774	1.252	Nov 2015	1.106	Feb 2017	0.000		-		0.000	0.000	5.132	-
Studies and Analysis SW Dev	SS/CR	Johns Hopkins : Baltimore, MD	1.473	0.000		0.100	Mar 2017	0.000		-		0.000	0.000	1.573	1.573
Prior Year Support costs no longer funded in FYDP	Various	Various : Various	10.307	0.000		0.000		0.000		-		0.000	0.000	10.307	-
		Subtotal	39.167	6.392		1.722		1.448		-		1.448	2.881	51.610	-

Remarks

Software Dev - ALQ-214 SW Dev. Software Development challenges required additional funding to complete the effort.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Dev Test & Eval Supt ALQ-214 SW Imp	WR	Various : Various	0.420	0.000		0.000		0.000		-		0.000	0.000	0.420	-
Oper Test & Eval ALQ-214 SW Imp	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Integrated Test & Eval ALQ-214 SW Imp	WR	NAWCWD : China Lake, CA	0.000	0.952	Mar 2016	0.000		0.000		-		0.000	0.000	0.952	-
Dev Test & Eval Supt ALQ-214 SW Imp	WR	NAWCWD : China Lake, CA	9.366	0.740	Jul 2016	1.350	Feb 2017	0.000		-		0.000	0.000	11.456	-
Dev Test & Eval Supt ALQ-214 SW IMP	WR	NAWCWD : Point Mugu, CA	0.743	0.111	Nov 2015	0.319	Feb 2017	0.000		-		0.000	0.000	1.173	-
Oper Test & Eval IDECM	WR	NAWCWD : China Lake, CA	2.737	0.000		0.000		0.000		-		0.000	0.000	2.737	-
Eng Test & Eval IDECM	WR	Various : Various	2.210	0.400	Nov 2015	0.175	Dec 2016	0.434	Nov 2017	-		0.434	0.874	4.093	-
Eng & Tech Srvcs (Non-FFRDC)	SS/CPFF	Various : Various	1.588	0.455	Jun 2016	0.292	Dec 2016	0.153	Dec 2017	-		0.153	0.311	2.799	2.799
Prior Year T&E costs no longer funded in FYDP	Various	Various : Various	26.007	0.000		0.000		0.000		-		0.000	0.000	26.007	-
		Subtotal	43.071	2.658		2.136		0.587		-		0.587	1.185	49.637	-

Remarks

SWIP FOT&E has not been conducted in FY17 due to lack of software maturity and available test resources. Additional Developmental Test & Evaluation for SWIP support will continue at both China Lake and Point Mugu in FY17.

Management Services ($ in Millions)

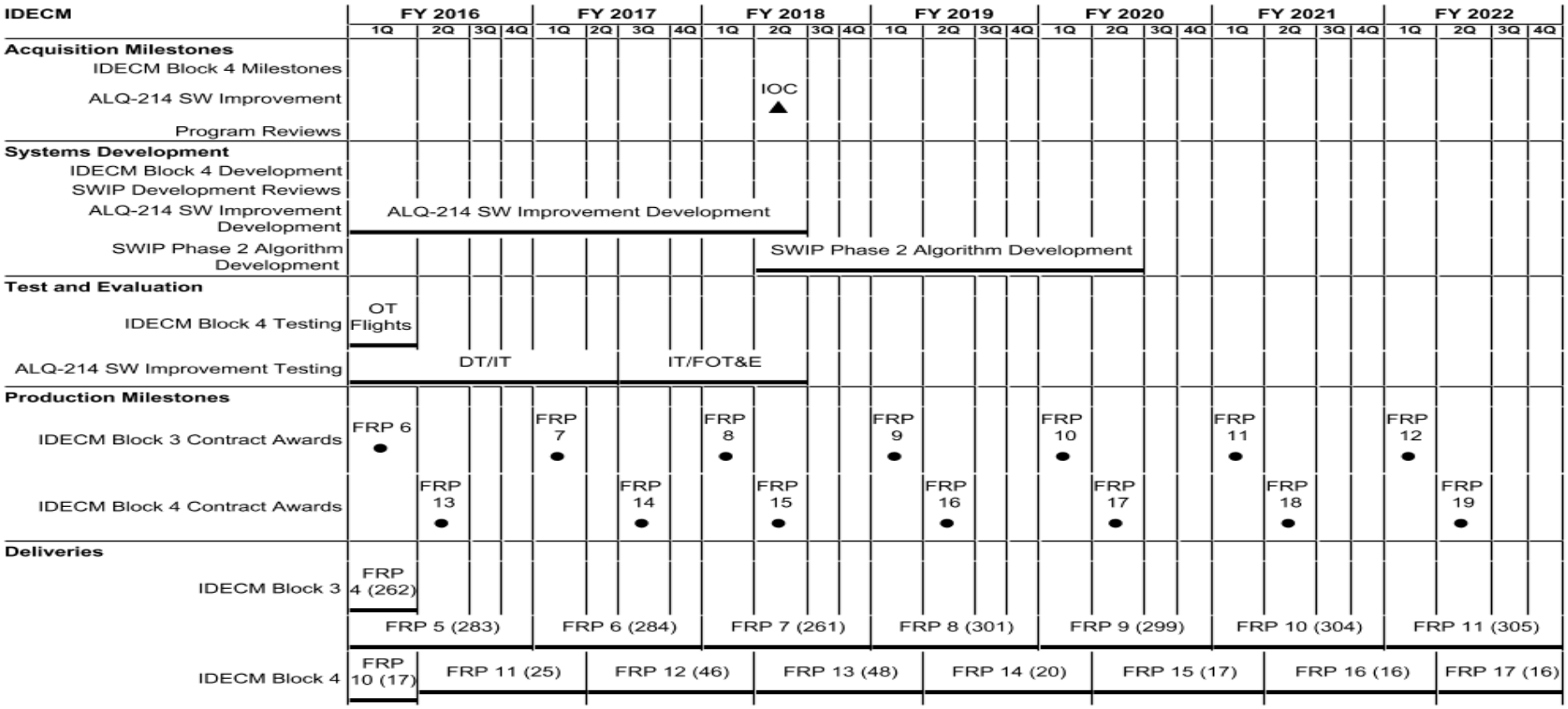
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Allot	NAWCAD : Pax River, MD	0.775	0.061	Oct 2015	0.069	Oct 2016	0.062	Oct 2017	-		0.062	0.118	1.085	-
Prior Year Mgmt costs no longer funded in FYDP	Various	Various : Various	88.935	0.000		0.000		0.000		-		0.000	0.000	88.935	-
		Subtotal	89.710	0.061		0.069		0.062		-		0.062	0.118	90.020	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 2175 / *Tactical Air Electronic Warfare*	

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	479.660	9.111		3.927		2.097		-		2.097	4.184	498.979	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*



2018PB - 0604270N - 2175 IDECM Block 4 is an ECP to Block 2

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
IDECM				
Acquisition Milestones: ALQ-214 SW Improvement: ALQ-214 SW Improvement (IOC)	2	2018	2	2018
Systems Development: ALQ-214 SW Improvement Development: ALQ-214 SW Improvement Development	1	2016	2	2018
Systems Development: SWIP Phase 2 Algorithm Development: SWIP Phase 2 Algorithm Development	2	2018	2	2020
Test and Evaluation: IDECM Block 4 Testing: IDECM Block 4 Operational Testing Flights	1	2016	1	2016
Test and Evaluation: ALQ-214 SW Improvement Testing: ALQ-214 SW Improvement Development Testing (DT)/Integrated Testing (IT)	1	2016	2	2017
Test and Evaluation: ALQ-214 SW Improvement Testing: ALQ-214 SW Improvement Integrated Test (IT)/Follow-on Test & Evaluation (FOT&E)	3	2017	2	2018
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 6	1	2016	1	2016
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 7	1	2017	1	2017
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 8	1	2018	1	2018
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 9	1	2019	1	2019
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 10	1	2020	1	2020
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 11	1	2021	1	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 12	1	2022	1	2022
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 13	2	2016	2	2016
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 14	3	2017	3	2017
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 15	2	2018	2	2018
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 16	2	2019	2	2019
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 17	2	2020	2	2020
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 18	2	2021	2	2021
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 19	2	2022	2	2022
Deliveries: IDECM Block 3: IDECM Block 3 FRP 4 Deliveries (262)	1	2016	1	2016
Deliveries: IDECM Block 3: IDECM Block 3 FRP 5 Deliveries (283)	1	2016	4	2016
Deliveries: IDECM Block 3: IDECM Block 3 FRP 6 Deliveries (284)	1	2017	4	2017
Deliveries: IDECM Block 3: IDECM Block 3 FRP 7 Deliveries (261)	1	2018	4	2018
Deliveries: IDECM Block 3: IDECM Block 3 FRP 8 Deliveries (301)	1	2019	4	2019
Deliveries: IDECM Block 3: IDECM Block 3 FRP 9 Deliveries (299)	1	2020	4	2020
Deliveries: IDECM Block 3: IDECM Block 3 FRP 10 Deliveries (304)	1	2021	4	2021
Deliveries: IDECM Block 3: IDECM Block 3 FRP 11 Deliveries (305)	1	2022	4	2022
Deliveries: IDECM Block 4: IDECM Block 4 FRP 10 Deliveries (17)	1	2016	1	2016
Deliveries: IDECM Block 4: IDECM Block 4 FRP 11 Deliveries (25)	2	2016	1	2017
Deliveries: IDECM Block 4: IDECM Block 4 FRP 12 Deliveries (46)	2	2017	1	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Deliveries: IDECM Block 4: IDECM Block 4 FRP 13 Deliveries (48)	2	2018	1	2019
Deliveries: IDECM Block 4: IDECM Block 4 FRP 14 Deliveries (20)	2	2019	1	2020
Deliveries: IDECM Block 4: IDECM Block 4 FRP 15 Deliveries (17)	2	2020	1	2021
Deliveries: IDECM Block 4: IDECM Block 4 FRP 16 Deliveries (16)	2	2021	1	2022
Deliveries: IDECM Block 4: IDECM Block 4 FRP 17 Deliveries (16)	2	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 3308 / *Technology Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3308: *Technology Development*	0.000	0.000	2.016	2.286	-	2.286	6.309	6.373	8.669	8.841	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

PE 0604279N consolidated to PE 0604270N beginning in FY 2017 pursuant to Principal Deputy Assistant Secretary of the Navy Financial Management and Comptroller (PDASN (FM&C)) memorandum signed 5 December 2014.

A. Mission Description and Budget Item Justification

Project Unit 3308 / Technology Development funds efforts that focus on the quick reaction prototyping of tactical Electronic Warfare (EW)/countermeasures solutions for increased survivability providing friendly forces the self-protection necessary for successful mission accomplishments. This program directly addresses the operational requirement of strike platforms for optimization of EW/countermeasure solutions across the Department of the Navy. Improved countermeasure capabilities and techniques through modeling and simulation, validated in subsequent field testing to address new and emerging threats, capitalize upon upgrades to Aircraft Survivability Equipment systems capabilities for strike platforms and evaluate new radio frequency countermeasure and infra-red countermeasure technologies.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Technology Development	0.000	2.016	2.286	0.000	2.286
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Continue EW vulnerability studies/analysis, product development and test conducted for strike aircraft.					
FY 2018 Base Plans: Continue EW vulnerability studies/analysis, product development and test conducted for strike aircraft.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	2.016	2.286	0.000	2.286

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3308 / *Technology Development*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

Electronic Warfare/vulnerability studies/analysis, product development and test conducted for strike aircraft across the Future Years Defense Program (FYDP).

E. Performance Metrics

Electronic Warfare (EW) vulnerability studies/analysis, product development and test conducted for strike aircraft across the FYDP.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 3309 / *Assault Survivability Optimization*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3309: *Assault Survivability Optimization*	0.000	0.000	3.375	0.851	-	0.851	0.843	0.844	0.866	0.884	Continuing	Continuing
Quantity of RDT&E Articles		-	480	-	-	-	-	-	-	-		

Note

PE 0604279N consolidated to PE 0604270N beginning in FY 2017 pursuant to Principal Deputy Assistant Secretary of the Navy Financial Management and Comptroller (PDASN (FM&C)) memorandum signed 5 December 2014.

A. Mission Description and Budget Item Justification

Program was established by Chief of Naval Operations (OPNAV) N98 to fill United States Navy (USN) and United States Marine Corps (USMC) aircraft survivability gaps against current and future threat systems using current, and advanced technology expendable countermeasures as well as improvements in Aircraft Survivability Equipment (ASE) systems. Assault Survivability Optimization is required for Department of Navy aircraft self-protection against Man-Portable Air Defense Systems (MANPADs), including accelerated proliferation of threat addressed in JUONS #SO-0010. This project funds the development, testing, and rapid fielding of advanced countermeasures and enhanced employment techniques needed to support current and future operations for USN and USMC aircraft; incorporates capability advancements in ASE and expendable countermeasures to develop and deploy countermeasure responses resulting in increased platform survivability. Countermeasure Techniques developed for improved survivability are supported by Statement of Functionality for Aircraft Survivability Equipment Smart Dispense, dated 19 January 2012. Resources will be applied to the following areas: 1) studies and evaluations to optimize current countermeasures and ASE capabilities, 2) development and demonstration of advanced expendable countermeasures and countermeasure techniques, 3) testing and evaluation of advanced countermeasures, 4) development of system software integration for the testing and deployment of advanced countermeasure techniques, and 5) development of and upgrades to modeling tools and specialized equipment required to conduct evaluation of advanced countermeasures against proliferating threats.
Advanced countermeasures procured in FY 2016 (PE 0604279N) will support flight test for optimized/advanced countermeasures techniques in FY 2017. The quantity of 1,552 units is required by Air Expendable Countermeasures Test and Evaluation Master Plan #1480 to complete the flight testing for test Mission Data Files (MDF) and optimized/advanced countermeasures techniques (RDT&E Articles are advanced air expendable countermeasures).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Assault Survivability Optimization	0.000	3.375	0.851	0.000	0.851
Articles:	-	480	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3309 / *Assault Survivability Optimization*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue development and testing of advanced countermeasure techniques and upgrade specialized evaluation equipment for advancing threat systems. Perform modeling and simulation and effectiveness flight testing for UH-1Y, AH-1Z and MH-60S. 480 test articles procured in FY17 are advanced expendable countermeasures for flight effectives testing /optimization flight tests in FY18. Continue building radio frequency countermeasure modeling and simulation capability to address advanced threats and support development of radio frequency countermeasures and techniques. ***FY 2018 Base Plans:*** Continue development and testing of advanced countermeasure techniques and upgrade specialized evaluation equipment for advancing threat systems. Perform modeling and simulation and effectiveness flight testing for MH-60R. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	3.375	0.851	0.000	0.851

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Acquisition strategy is to leverage improvements in air expendable countermeasures technology and integration of existing Aircraft Survivability Equipment (ASE) sensor data to enhance platform survivability on United States Navy and United States Marine Corps platforms through more effective dispense techniques, investing in enhancements in modeling and simulation tools to better evaluate countermeasure effectiveness, upgrading test and evaluation equipment to incorporate current and future threats for effectiveness tests and developing and demonstrating advanced concept countermeasures for future threats. Advanced countermeasures procured in FY16 will support flight test for optimized/advanced countermeasure techniques in FY17. New advanced countermeasures are then transitioned to the Procurement of Ammunition Navy and Marine Corps appropriation for procurement and fielding. New optimized and advanced countermeasure techniques are delivered to government software support activities for fleet release to increase aircraft/aircrew survivability.

E. Performance Metrics

Maintain Air Expendable Countermeasures (AECM) ORD: #512-88-89 dated 28 May 1999 requirement to provide operationally effective mixture of countermeasures that can be employed to degrade and/or neutralize the effectiveness of current and projected threats. Continued development of optimized/advanced countermeasure techniques and advance countermeasures by on-going analysis and test flight efforts related to aircraft platform survivability based on threat development and proliferation. Countermeasure Techniques developed for improved survivability are further supported by Statement of Functionality for Aircraft Survivability Equipment

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3309 / *Assault Survivability Optimization*

Smart Dispense, dated 19 January 2012. Project Unit 3309 efforts will continue to change in response to this requirement when similar threat proliferation, advances in countermeasures technology and integrated ASE capability advancements are accomplished in particular the Radio Frequency (RF) and Ultra-violet (UV) spectrums. Project will include efforts to satisfy Department of Navy aircraft self-protection against Man-Portable Air Defense Systems (MANPADs), including accelerated proliferation of threat addressed in JUONS #SO-0010.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 3327 / *MAGTF EW Aviation Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3327: *MAGTF EW Aviation Development*	0.000	0.000	64.817	29.643	-	29.643	21.846	12.053	4.017	2.869	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

PE 0604376M was consolidated to PE 0604270N beginning in FY 2017 pursuant to Principal Deputy Assistant Secretary of the Navy Financial Management and Comptroller (PDASN (FM&C)) memorandum signed 5 December 2014.

A. Mission Description and Budget Item Justification

Original President's Budget 2017 FY 2017 budget submission was $20.817 million and has increased by $44 million to $64.817 million as a result of the amended 2017 President's Budget. President's Budget 2017 as amended includes additional funding for the following efforts: $3 million for development of a jettison capability for the AN/ALQ-231(V)3 pod on the H-1 platform; $5.5 million for development of the Electronic Warfare Services Architecture (EWSA); $1 million for software development to integrate the Marine Air Ground Tablet (MAGTAB) with the AN/ALQ-231(V); $4 million for Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) Jammer Techniques Optimization development; $10 million for integration of the AN/ALQ-231(V)1 on the KC-130 and flight envelope expansion; and $20.5 million for Electronic Warfare Range Improvements.

This project unit supports the United States Marine Corps (USMC) development of Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) and the various elements of its distributed System of Systems (SoS) that support the Commandant of the Marine Corps' Strategy and Vision 2025 and Joint Vision 2025. The SoS will address MAGTF EW sufficiency gaps in the areas of Electronic Attack, EW Support, and Electronic Protection with a multitude of payloads designed for carriage on a variety of organic MAGTF air and ground assets. Payload development plans follow an adaptable, modular and open architecture philosophy to combat the increasing capability gap and enable future growth at a reduced operational and sustainment cost.

The AN/ALQ-231(V)1 pod is the Fixed-Wing variant of the Intrepid Tiger II pod flown on the AV-8B and F/A-18A-D platforms. The AN/ALQ-231(V)2 will be the variant of the Intrepid Tiger II pod flown on unmanned aerial vehicle (UAV) platforms once integration is complete. The AN/ALQ-231(V)3 is the Rotary-Wing variant of the Intrepid Tiger II pod flown on the AH-1 and UH-1 platforms. As of the President's Budget 2015 submission, the AN/ALQ-231(V)1 was the only approved configuration and nomenclature for the Intrepid Tiger II pod. The re-designation of the AN/ALQ-231 variants occurred with the approval of Rapid Deployment Capability authorization for AN/ALQ-231 on Rotary Wing platforms by the Assistant Secretary of the Navy for Research, Development, and Acquisition (ASN(RD&A)) on January 14, 2014.

MAGTF EW will also commence efforts to develop an EW Payload for USMC Unmanned Aircraft System (UAS) platforms in FY 2018. Host platforms include, but are not limited to, the RQ-21A. This project will result in an EW payload capable of conducting, supporting, and coordinating Electro-Magnetic Spectrum (EMS) operations in the form of Electronic Attack (EA) and Electronic Surveillance (ES) against Irregular Warfare threats. Additionally, this payload will be scalable and adaptable for emerging threats and will be interoperable with the USMC's Electronic Warfare Services Architecture (EWSA). This new capability will be integrated for MAGTF tactical coordination of cyberspace and EW operations via the Cyber Electronic Warfare Coordination Cell (CEWCC).

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Intrepid Tiger II (AN/ALQ-231)	0.000	20.817	21.143	0.000	21.143
Articles:	-	-	-	-	-

FY 2016 Accomplishments:
N/A

FY 2017 Plans:
The AN/ALQ-231 (V)1 BLK X received a $5.400M investment in FY 2016 by the Office of Secretary of Defense's Science and Technology (S&T) program under Program Element (PE) 0603618D8Z Project Unit (PU) P244

In FY 2017, technologies developed for the AN/ALQ-231(V)1 BLK X by the Office of Secretary of Defense's S&T program under PE 0603618D8Z PU P244 will transition to the USMC. The Intrepid Tiger II (AN/ALQ-231) program will continue to mature hardware technology, update targeting techniques, and correct identified software discrepancies to ensure relevance against emerging communication and radar threats.

The USMC will assume responsibility for all efforts to develop and test Intrepid Tiger II based solutions to radar threats in support of the penetrating jammer mission, culminating in the release of the AN/ALQ-231 (V)1 BLK X Radar Jammer for the AV-8B, F/A-18C/D, and MV-22. Updates to major components of the AN/ALQ-231 to address this new threat set will commence in FY 2016 and are expected to include upgrades to amplifiers, transceivers, antennas, radios/encryptors, a direction finding array, and the development of a modular pod shell. Other components may also require upgrade/update due to configurations in the AN/ALQ-231 V(1) pod. Additionally, lab testing of upgraded components is expected to occur in FY 2017.

FY 2017 efforts also include the investigation of the potential for integration of the Intrepid Tiger II capability on the C-130 platform. Related research efforts will work to develop an enabling capability to facilitate Collaborative Electronic Warfare (CEW) through shared organic, national and space-based Electromagnetic Spectrum (EMS) sensing (electronic surveillance) and coordinated non-kinetic fires (electronic attack) in accordance with spectrum operations objectives by linking Command and Control (C2), operators and sensors across a network interface, and continue to explore uses for Intrepid Tiger II with the Cyber Electronic Warfare Coordination Cell (CEWCC).

FY 2018 Base Plans:

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
The USMC will continue efforts to develop and test Intrepid Tiger II based solutions to radar threats in support of the penetrating jammer mission, culminating in the release of the AN/ALQ-231(V)1 BLK X Radar Jammer for the AV-8B, F/A-18C/D, and MV-22. Updates to major components of the AN/ALQ-231 to address this new threat set commenced in FY 2016 and include upgrades to amplifiers, transceivers, antennas, radios/encryptors, a direction finding array, and the development of a modular pod shell. Other components may also require upgrade/update due to configurations in the AN/ALQ-231(V)1 pod. The USMC will also continue software development efforts that commenced in FY 2017. Efforts will also continue the investigation of the potential for integration of the Intrepid Tiger II capability on the C-130 platform and other platforms such as the CH-53K. Related research efforts will work to develop an enabling capability to facilitate Collaborative Electronic Warfare (CEW) through shared organic, national and space-based Electromagnetic Spectrum (EMS) sensing (electronic surveillance) and coordinated non-kinetic fires (electronic attack) in accordance with spectrum operations objectives by linking Command and Control (C2), operators and sensors across a network interface, and continue to explore uses for Intrepid Tiger II with the Cyber Electronic Warfare Coordination Cell (CEWCC). Additionally, development of the Electronic Warfare Services Architecture (EWSA) in support of increased Intrepid Tiger II targets and missions shall continue in FY 2018. ***FY 2018 OCO Plans:*** N/A					
Title: Unmanned Aircraft System (UAS) Electronic Warfare (EW) Payload ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Efforts will commence to develop an EW Payload for USMC UAS platforms. Platforms include, but are not limited to, the RQ-21A. This project will result in an EW payload capable of conducting, supporting, and coordinating EMS operations in the form of electronic attack and electronic surveillance against Irregular Warfare threats. This payload will be scalable and adaptable for emerging threats and will be interoperable with the	0.000 -	0.000 -	6.000 -	0.000 -	6.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
USMC's EWSA. This new capability will be integrated for MAGTF tactical coordination of cyberspace and EW operations via the Cyber CEWCC. This effort is a new start in FY 2018. ***FY 2018 OCO Plans:*** N/A					
Title: AN/ALQ-231(V)3 UH-1 Jettison Capability ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding for the development and test of a jettison capability for the ALQ-231(V)3 pod on the UH-1 platform. This effort is required to clear a technical deficiency and to enhance aircrew safety. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	0.000 -	3.000 -	0.000 -	0.000 -	0.000 -
Title: Electronic Warfare Services Architecture (EWSA) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding for the accelerated development of the secure, extensible data exchange and hardware protocol that connects the Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) and Signals Intelligence (SIGINT) systems known as the Electronic Warfare Services Architecture	0.000 -	5.500 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
(EWSA). The EWSA is a Services Oriented Architecture that lays the foundation for the Marine Corps' operationalization of the cyberspace domain and the Electromagnetic Spectrum (EMS) by combining EMS dependent capabilities and cyberspace capabilities to support the MAGTF. The backbone of the Commandant's MAGTF EW 2020 Vision, the EWSA provides the MAGTF an organic capability for planning, executing, and assessing the integrated employment of cyberspace and EW capabilities in support of MAGTF operations and the ground scheme of maneuver. Development of this software is critical to achieve the full capability of the MAGTF EW System of Systems (SoS) concept. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Marine Air Ground Tablet (MAGTAB) Integration with AN/ALQ-231(V) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding to integrate the common operator display known as Marine Air Ground Tablet (MAGTAB) for interface with the Intrepid Tiger II electronic warfare system. This effort funds the porting of the current operational software from the existing operator display to MAGTAB in-line with Marine Corps initiatives for digital interoperability across the force. Furthermore, this initiative reduces the number of electronic devices required by aircrew in the cockpit increasing operator situational awareness and safety. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	0.000 -	1.000 -	0.000 -	0.000 -	0.000 -
Title: MAGTF EW Jammer Techniques Development ***Articles:*** ***FY 2016 Accomplishments:***	0.000 -	4.000 -	2.500 -	0.000 -	2.500 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding to significantly increase the Marine Corps' cyberspace and Electronic Warfare expertise via the development of new and updated jammer techniques. These techniques will be designed to exploit the interrelated cyberspace domain and the electromagnetic spectrum (EMS) through the development, validation, and delivery of Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW)-specific Tactics, Techniques, and Procedures (TTPs) and testing of MAGTF EW systems against existing and emerging threats. Additional efforts include the acquisition of simulators to better emulate threshold and objective threats for MAGTF EW systems. ***FY 2018 Base Plans:*** FY 2018 will continue efforts to significantly increase the Marine Corps' cyberspace and Electronic Warfare expertise via the development of new and updated jammer techniques. These techniques will be designed to exploit the interrelated cyberspace domain and the electromagnetic spectrum (EMS) through the development, validation, and delivery of Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW)-specific Tactics, Techniques, and Procedures (TTPs) and testing of MAGTF EW systems against existing and emerging threats. Additional efforts include the acquisition of simulators to better emulate threshold and objective threats for MAGTF EW systems. ***FY 2018 OCO Plans:*** N/A					
Title: KC-130 Integration for AN/ALQ-231(V)1 Block 1 Communications Jammer ***Articles:***	0.000 -	10.000 -	0.000 -	0.000 -	0.000 -
FY 2016 Accomplishments: N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding for the integration of the ALQ-231(V)1 Block 1 Communications Jammer on the KC-130 platform via the Special Airborne Mission Installation and Response (SABIR) arm. This integration answers an urgent fleet requirement put forth in validated Urgent Universal Need Statement (UUNS) MROC DM 21-2016. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 OCO Plans:*** N/A					
Title: Electronic Warfare (EW) Range Improvements and Upgrades ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding for hardware, software and equipment purchases required to improve Electronic Warfare (EW) Ranges in order to ensure that Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) capabilities can be fully tested against actual and simulated threats. These upgrades are required to ensure the effectiveness of the MAGTF EW system-of-systems warfighting concept against the spectrum of threats to the MAGTF. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	0.000 -	20.500 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	0.000	64.817	29.643	0.000	29.643

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0587: *MAGTF EW For Aviation*	7.680	21.976	10.111	-	10.111	11.810	41.694	31.329	34.061	59.337	306.795

Remarks

D. Acquisition Strategy

This project unit is part of United States Marine Corps I(USMC) ed efforts to ensure Marine Corps requirements are included in the budget process for the Future Year Defense Program and beyond. These efforts include AN/ALQ-231 Intrepid Tiger II(V)1, Intrepid Tiger II(V)2, Intrepid Tiger II(V)3, Collaborative Electronic Warfare (EW)/

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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EW Battle Management, EW Payload, and EW Service Architecture (formerly Collaborative Online Reconnaissance Provider Operationally Responsive Attack Link). These programs are the Marine Corps' initial steps to create systems to distribute EW capability across the battle space.

E. Performance Metrics

Continuation of research into Engineering Change Proposals (ECPs) for capability upgrades for AN/ALQ-231(V)1 and AN/ALQ-231(V)3 Intrepid Tiger II pods. Commencement of research to develop an EW payload for USMC Unmanned Aircraft Systems.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Intrepid Tiger BLK X Hardware Development - Amplifiers	WR	NAWCWD : Point Mugu, CA	0.000	0.000		1.000	May 2017	1.000	Nov 2017	-		1.000	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Hardware Development - Transceivers	WR	NAWCWD : Point Mugu, CA	0.000	0.000		3.000	May 2017	2.500	Nov 2017	-		2.500	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Hardware Development - Antennas	WR	NAWCWD : Point Mugu, CA	0.000	0.000		1.500	May 2017	1.250	Nov 2017	-		1.250	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Hardware Development - Modular Pod Shell	WR	NAWCWD : Point Mugu, CA	0.000	0.000		2.000	May 2017	1.750	Nov 2017	-		1.750	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Hardware Development - Radios/Encryptors	WR	NAWCWD : Point Mugu, CA	0.000	0.000		2.000	May 2017	1.750	Nov 2017	-		1.750	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Hardware Development - Direction Finding Array	WR	NAWCWD : Point Mugu, CA	0.000	0.000		2.000	May 2017	1.750	Nov 2017	-		1.750	Continuing	Continuing	Continuing
UAS EW Payload Hardware Development	WR	NAWCWD : Point Mugu, CA	0.000	0.000		0.000		2.548	Nov 2017	-		2.548	Continuing	Continuing	Continuing
UAS EW Payload Software Development	WR	NAWCWD : Point Mugu, CA	0.000	0.000		0.000		1.323	Nov 2017	-		1.323	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.400	Nov 2016	1.805	Nov 2017	-		1.805	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCWD : Point Mugu, CA	0.000	0.000		19.437	Nov 2016	9.485	Nov 2017	-		9.485	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Crane, IN	0.000	0.000		0.150	Apr 2017	0.050	Nov 2017	-		0.050	0.000	0.200	-
Systems Engineering	WR	NRL : Washington, DC	0.000	0.000		1.000	Apr 2017	0.250	Nov 2017	-		0.250	0.000	1.250	-
Aircraft Integration	SS/CPIF	Lockheed Martin : Greenville, SC	0.000	0.000		3.000	Jun 2017	0.000		-		0.000	0.000	3.000	3.000
		Subtotal	0.000	0.000		36.487		25.461		-		25.461	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Growth in Systems Engineering efforts at NAWCWD Point Mugu, CA and NAWCAD Patuxent River, MD between FY 2017 and FY 2018 is due to the start of Unmanned Aircraft Systems Payload Development efforts in FY 2018.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - Jammer Techniques Development	SS/CPFF	Johns Hopkins University : Maryland	0.000	0.000		0.000		0.500	Dec 2017	-		0.500	0.000	0.500	-
Development Support	Various	Various : Various	0.000	0.000		0.425	Nov 2016	0.617	Nov 2017	-		0.617	Continuing	Continuing	Continuing
Eng & Tech Services	Various	Various : Various	0.000	0.000		0.103	Nov 2016	0.330	Nov 2017	-		0.330	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.528		1.447		-		1.447	-	-	-

Remarks

Growth in Support between FY 2017 and FY 2018 is due to the start of Unmanned Aircraft Systems Payload Development efforts in FY 2018.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Intrepid Tiger BLK X Flight Testing	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Flight Testing	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		1.235	Nov 2017	-		1.235	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Flight Testing	WR	NAWCWD : Point Mugu, CA	0.000	0.000		0.000		1.500	Nov 2017	-		1.500	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Testing	WR	NAWCWD : Point Mugu, CA	0.000	0.000		1.052	May 2017	0.000		-		0.000	Continuing	Continuing	Continuing
UH-1 Jettison Flight Test	WR	NAWCWD : China Lake, CA	0.000	0.000		2.250	Apr 2017	0.000		-		0.000	0.000	2.250	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

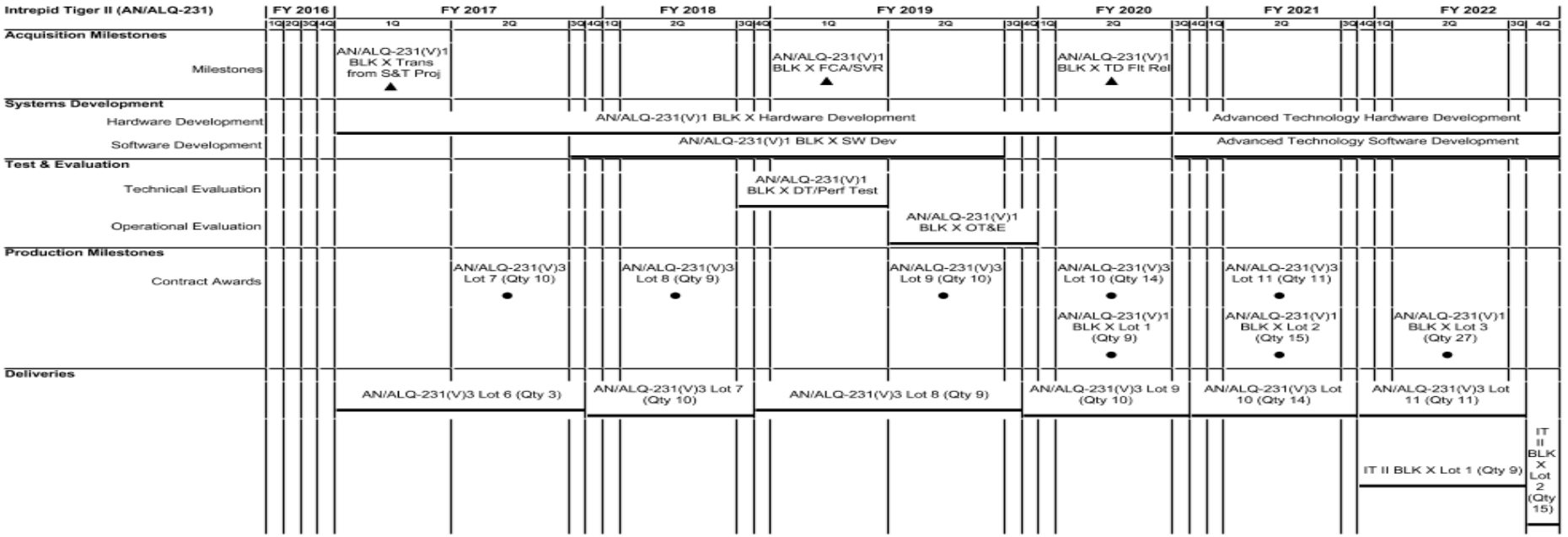
Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Intrepid Tiger KC-130 Integration Testing	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.500	Apr 2017	0.000		-		0.000	0.000	0.500	-
Intrepid Tiger KC-130 Integration Testing	WR	NAWCWD : Point Mugu, CA	0.000	0.000		1.000	Apr 2017	0.000		-		0.000	0.000	1.000	-
Intrepid Tiger KC-130 Integration Flight Test	WR	NAWCWD : China Lake, CA	0.000	0.000		2.500	Apr 2017	0.000		-		0.000	0.000	2.500	-
Test Range Upgrades	WR	NAWCWD : Point Mugu, CA	0.000	0.000		10.250	Apr 2017	0.000		-		0.000	0.000	10.250	-
Test Range Upgrades	WR	NAWCWD : China Lake, CA	0.000	0.000		10.250	Apr 2017	0.000		-		0.000	0.000	10.250	-
		Subtotal	0.000	0.000		27.802		2.735		-		2.735	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		64.817		29.643		-		29.643	-	-	-

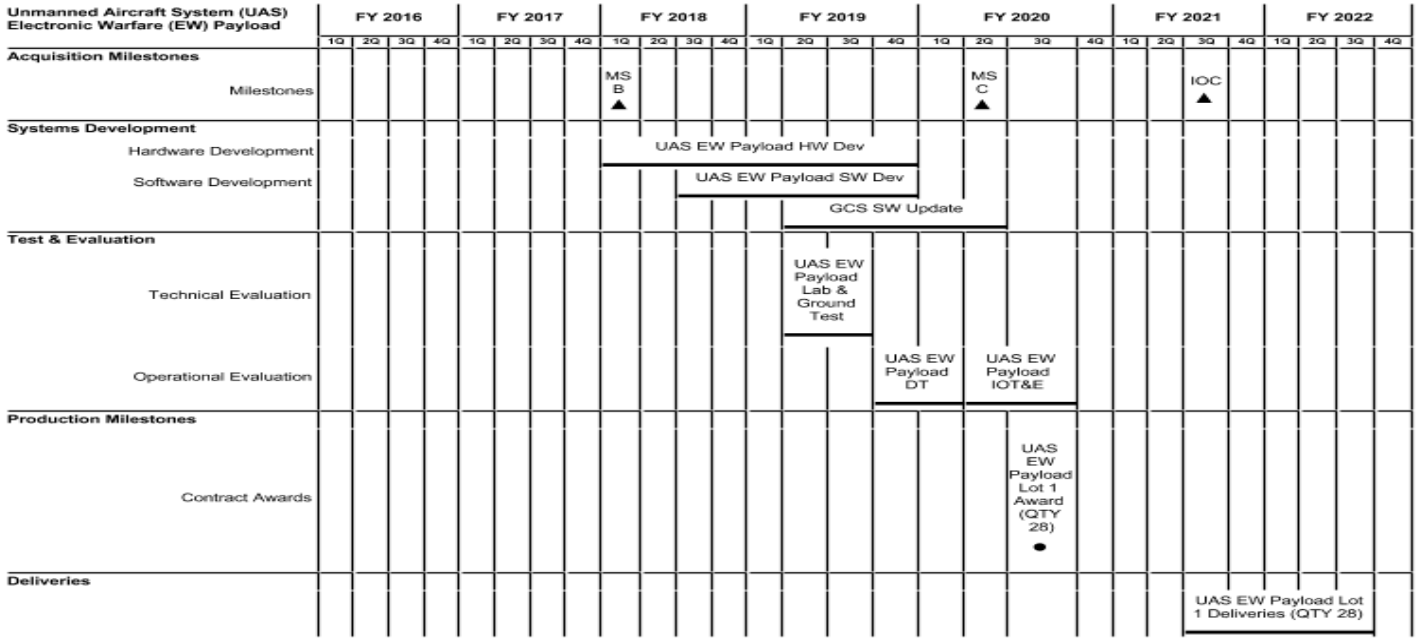
Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*



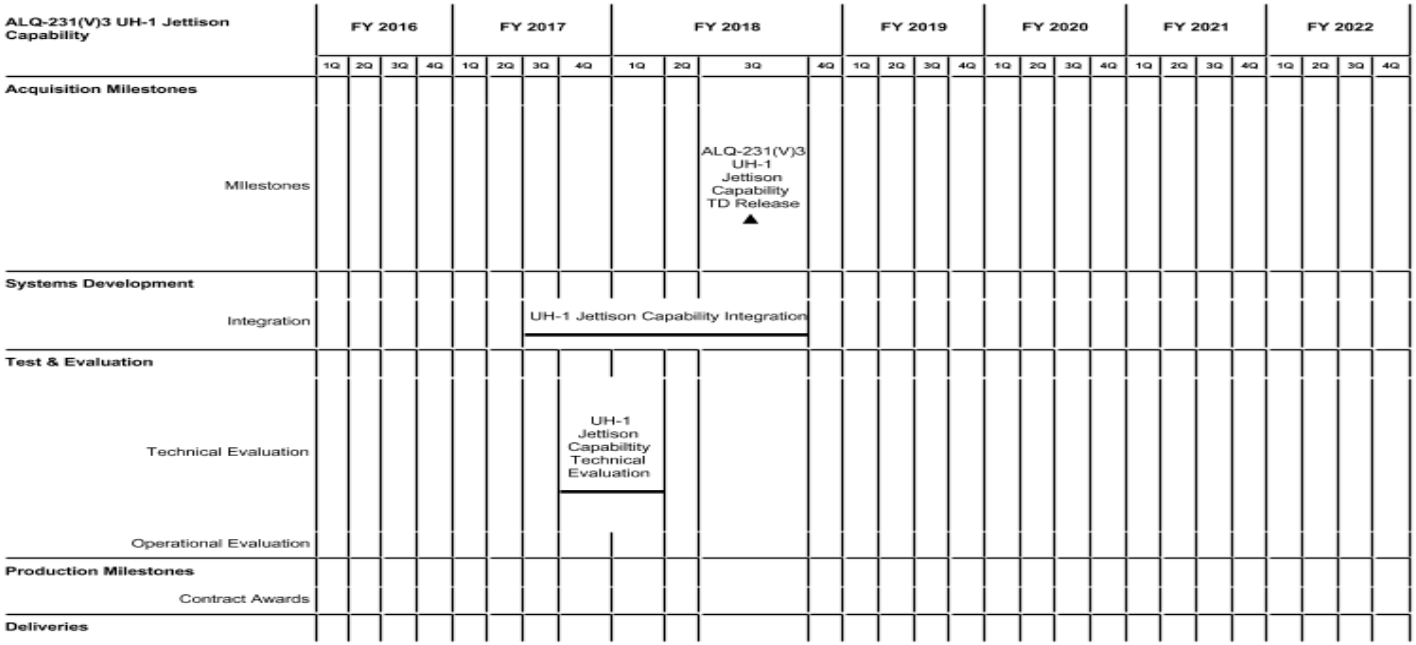
2018PB - 0604270N - 3327 AN/ALQ-231(V)1 BLK X abbreviated to IT II BLK X due to space constraints

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*



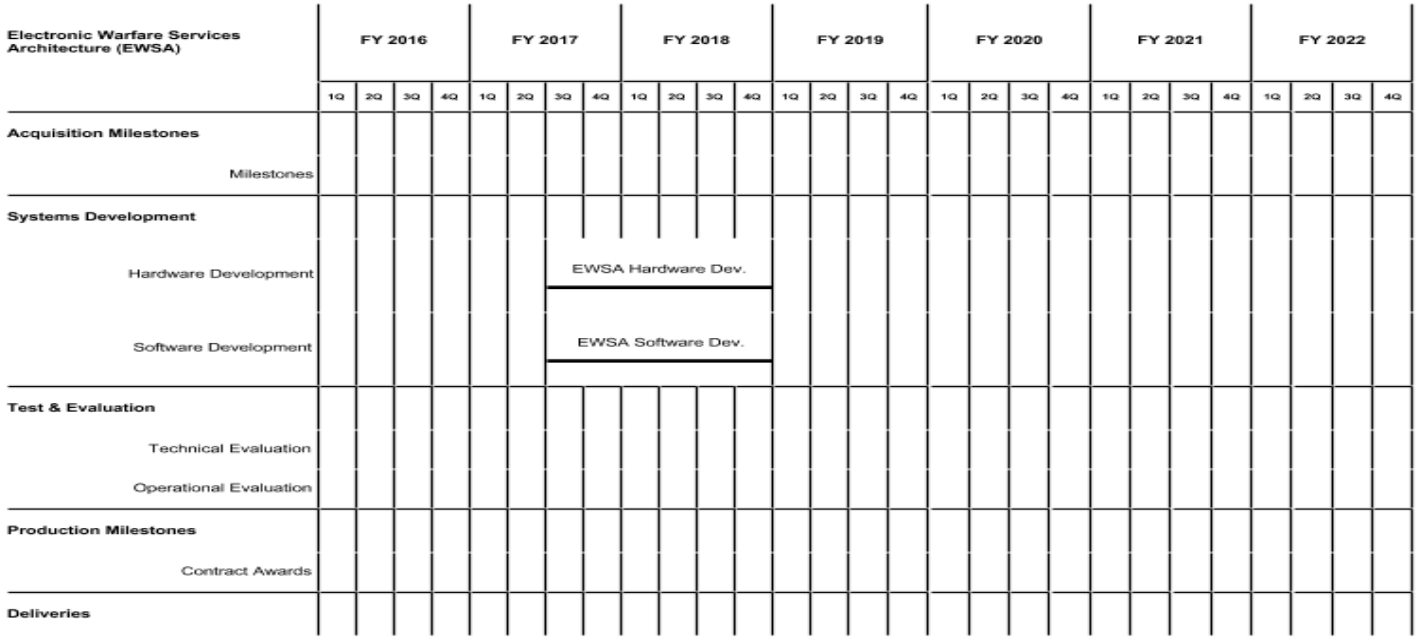
2018PB - 0604270N - 3327

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*



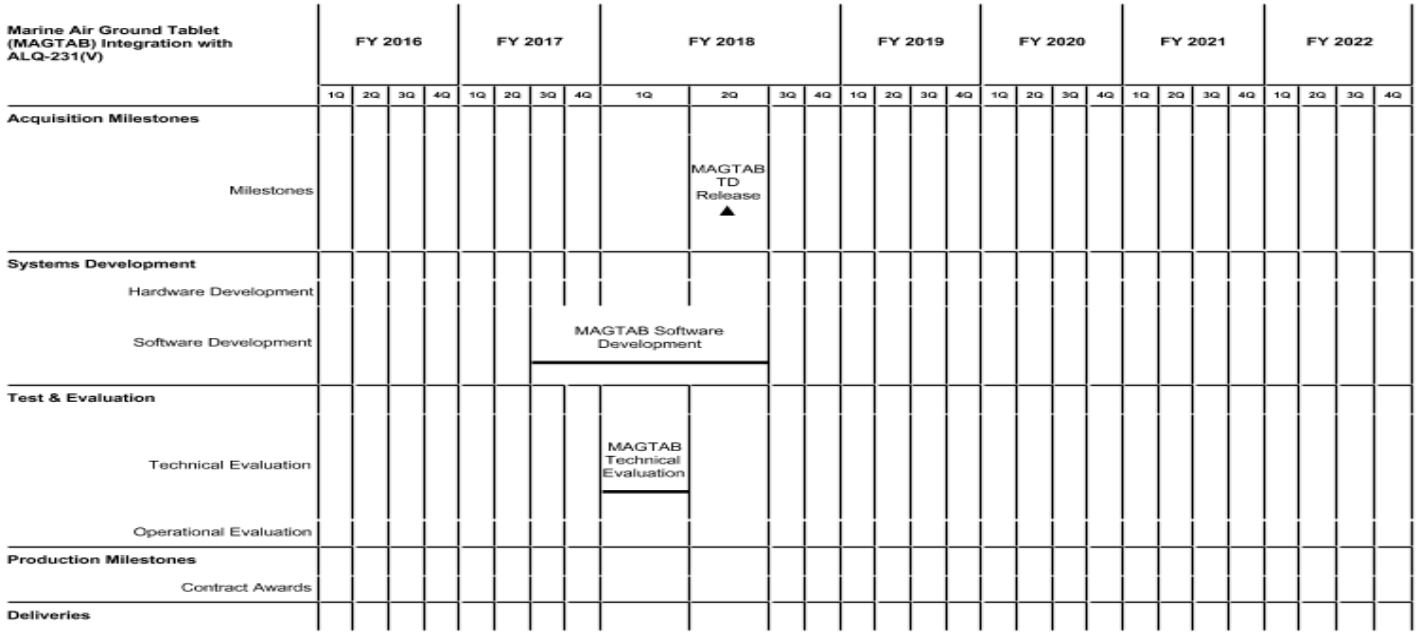
2018PB - 0604270N - 3327

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*



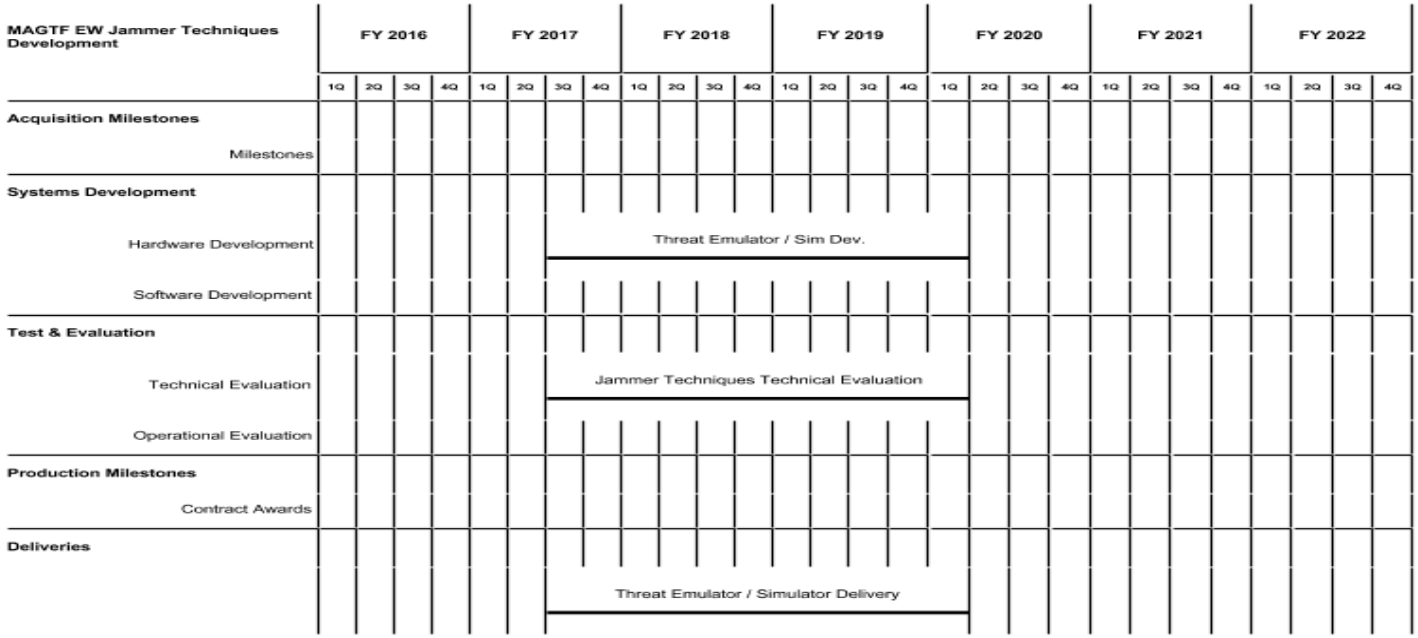
2018PB - 0604270N - 3327

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*



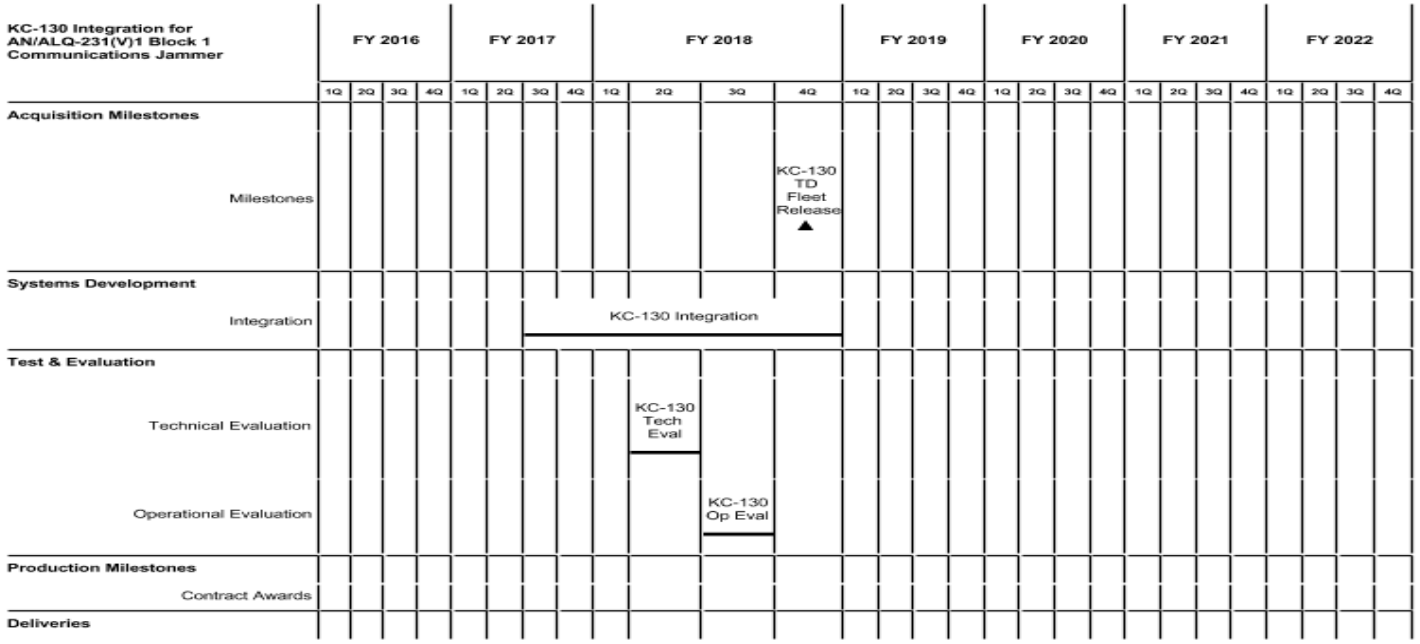
2018PB - 0604270N - 3327

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*



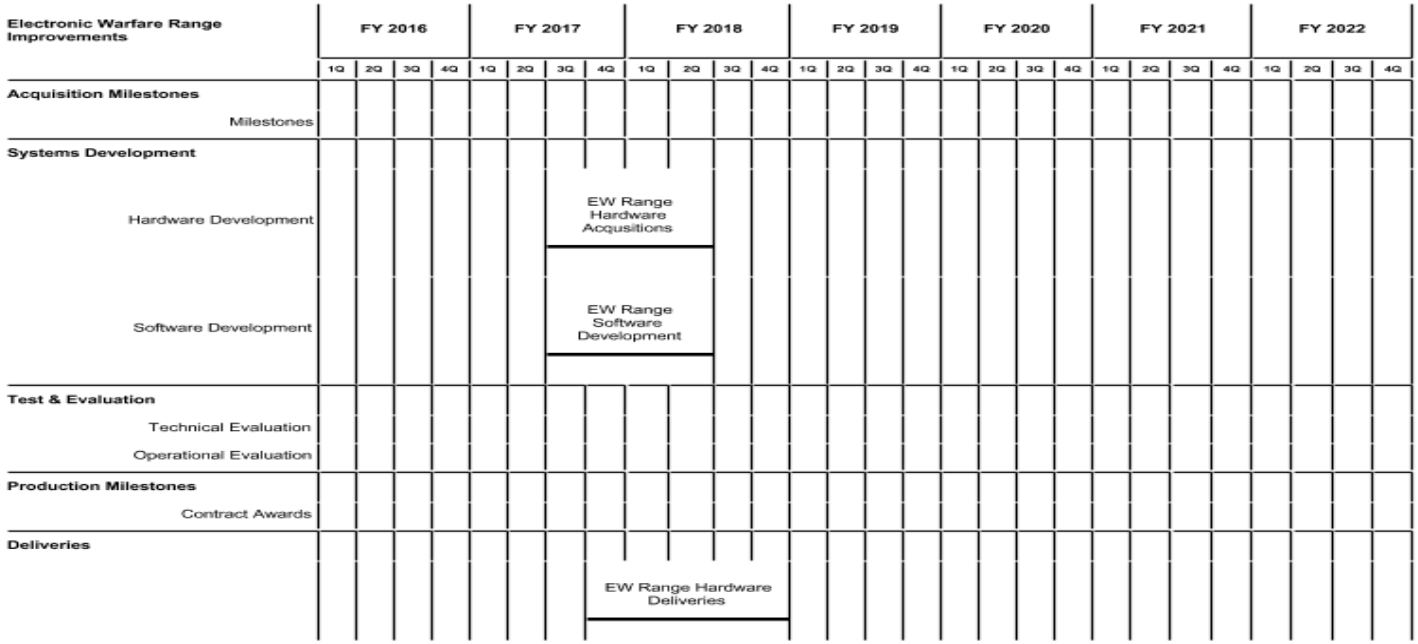
2018PB - 0604270N - 3327

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*



2018PB - 0604270N - 3327

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*



2018PB - 0604270N - 3327

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Intrepid Tiger II (AN/ALQ-231)				
Acquisition Milestones: Milestones: AN/ALQ-231(V)1 BLK X Transition from S&T project	1	2017	1	2017
Acquisition Milestones: Milestones: AN/ALQ-231(V)1 BLK X Functional Configuration Audit / System Verification Review	1	2019	1	2019
Acquisition Milestones: Milestones: AN/ALQ-231(V)1 BLK X TD Fleet Release	2	2020	2	2020
Systems Development: Hardware Development: AN/ALQ-231(V)1 BLK X Hardware Development	1	2017	2	2020
Systems Development: Hardware Development: Advanced Technology Hardware Development	3	2020	4	2022
Systems Development: Software Development: AN/ALQ-231(V)1 BLK X Software Development	3	2017	2	2019
Systems Development: Software Development: Advanced Technology Software Development	3	2020	4	2022
Test & Evaluation: Technical Evaluation: AN/ALQ-231(V)1 BLK X Developmental/ Performance Test	3	2018	1	2019
Test & Evaluation: Operational Evaluation: AN/ALQ-231(V)1 BLK X OT&E	2	2019	4	2019
Production Milestones: Contract Awards: AN/ALQ-231(V)3 Production Lot 7 (Qty 10)	2	2017	2	2017
Production Milestones: Contract Awards: AN/ALQ-231(V)3 Production Lot 8 (Qty 9)	2	2018	2	2018
Production Milestones: Contract Awards: AN/ALQ-231(V)3 Production Lot 9 (Qty 10)	2	2019	2	2019
Production Milestones: Contract Awards: AN/ALQ-231(V)3 Production Lot 10 (Qty 14)	2	2020	2	2020
Production Milestones: Contract Awards: AN/ALQ-231(V)3 Production Lot 11 (Qty 11)	2	2021	2	2021
Production Milestones: Contract Awards: AN/ALQ-231(V)1 BLK X Production Lot 1 (9 units)	2	2020	2	2020

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Milestones: Contract Awards: AN/ALQ-231(V)1 BLK X Production Lot 2 (15 units)	2	2021	2	2021
Production Milestones: Contract Awards: AN/ALQ-231(V)1 BLK X Production Lot 3 (27 units)	2	2022	2	2022
Deliveries: AN/ALQ-231(V)3 Lot 6 Deliveries (Qty 3)	1	2017	3	2017
Deliveries: AN/ALQ-231(V)3 Lot 7 Deliveries (Qty 10)	4	2017	3	2018
Deliveries: AN/ALQ-231(V)3 Lot 8 Deliveries (Qty 9)	4	2018	3	2019
Deliveries: AN/ALQ-231(V)3 Lot 9 Deliveries (Qty 10)	4	2019	3	2020
Deliveries: AN/ALQ-231(V)3 Lot 10 Deliveries (Qty 14)	4	2020	3	2021
Deliveries: AN/ALQ-231(V)3 Lot 11 Deliveries (Qty 11)	4	2021	3	2022
Deliveries: AN/ALQ-231(V)1 BLK X Lot 1 Deliveries (Qty 9)	4	2021	3	2022
Deliveries: AN/ALQ-231(V)1 BLK X Lot 2 Deliveries (Qty 15)	4	2022	4	2022
Unmanned Aircraft System (UAS) Electronic Warfare (EW) Payload				
Acquisition Milestones: Milestones: UAS EW Payload MS B	1	2018	1	2018
Acquisition Milestones: Milestones: UAS EW Payload MS C	2	2020	2	2020
Acquisition Milestones: Milestones: UAS EW Payload IOC	3	2021	3	2021
Systems Development: Hardware Development: UAS EW Payload Hardware Development	1	2018	4	2019
Systems Development: Software Development: UAS EW Payload Software Development	3	2018	4	2019
Systems Development: Software Development: Ground Control Station Software Update	2	2019	2	2020
Test & Evaluation: Technical Evaluation: UAS EW Payload Lab & Ground Test	2	2019	3	2019
Test & Evaluation: Operational Evaluation: UAS EW Payload Development Test	4	2019	1	2020
Test & Evaluation: Operational Evaluation: UAS EW Payload IOT&E	2	2020	3	2020
Production Milestones: Contract Awards: UAS EW Payload Lot 1 Award (QTY 28)	3	2020	3	2020
Deliveries: UAS EW Payload Lot 1 Deliveries (QTY 28)	3	2021	3	2022

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ALQ-231(V)3 UH-1 Jettison Capability				
Acquisition Milestones: MIlestones: ALQ-231(V)3 UH-1 Jettison Capability TD Release	3	2018	3	2018
Systems Development: Integration: UH-1 Jettison Capability Integration	3	2017	3	2018
Test & Evaluation: Technical Evaluation: UH-1 Jettison Capabiltity Technical Evaluation	4	2017	1	2018
Electronic Warfare Services Architecture (EWSA)				
Systems Development: Hardware Development: Electronic Warfare Services Architecture Hardware Development	3	2017	4	2018
Systems Development: Software Development: Electronic Warfare Services Architecture Software Development	3	2017	4	2018
Marine Air Ground Tablet (MAGTAB) Integration with ALQ-231(V)				
Acquisition Milestones: Milestones: MAGTAB TD Release	2	2018	2	2018
Systems Development: Software Development: MAGTAB Software Development	3	2017	2	2018
Test & Evaluation: Technical Evaluation: MAGTAB Technical Evaluation	1	2018	1	2018
MAGTF EW Jammer Techniques Development				
Systems Development: Hardware Development: Threat Emulator / Simulator Development	3	2017	1	2020
Test & Evaluation: Technical Evaluation: Jammer Techniques Technical Evaluation	3	2017	1	2020
Deliveries: Threat Emulator / Simulator Delivery	3	2017	1	2020
KC-130 Integration for AN/ALQ-231(V)1 Block 1 Communications Jammer				
Acquisition Milestones: Milestones: AN/ALQ-231(V)1 Block 1 on KC-130 TD Fleet Release	4	2018	4	2018
Systems Development: Integration: KC-130 Integration	3	2017	4	2018
Test & Evaluation: Technical Evaluation: KC-130 Technical Evaluation	2	2018	2	2018
Test & Evaluation: Operational Evaluation: KC-130 Operational Evaluation	3	2018	3	2018
Electronic Warfare Range Improvements				

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Systems Development: Hardware Development: Electronic Warfare (EW) Range Improvements Hardware Acquisitions	3	2017	2	2018
Systems Development: Software Development: Electronic Warfare (EW) Range Improvements Software Development	3	2017	2	2018
Deliveries: Electronic Warfare (EW) Range Improvements Hardware Deliveries	4	2017	4	2018

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 3371 / *MAGTF EW Interoperability Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3371: *MAGTF EW Interoperability Development*	0.000	0.000	1.657	1.639	-	1.639	0.947	0.968	0.990	1.012	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

PU 3371 was created in FY 2015 to administratively highlight specific work that was being done in Program Element (PE) 0604376M, Project Unit (PU) 3327. This PU has been moved to PE 0604270N in FY 2017 and continues efforts previously funded under PU 3327. It is not a new start for FY 2017.

A. Mission Description and Budget Item Justification

This project unit supports the United States Marine Corps air-ground interoperability by providing a variety of capabilities through multiple functions of the Software Reprogrammable Payload (SRP) when installed aboard SRP-capable aircraft. The spiral development plans allow adaptable, scalable, and open architecture philosophy to reduce stove-pipe solutions but enable future growth at a reduced operational and sustainment cost.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Software Reprogrammable Payload	0.000	1.657	1.639	0.000	1.639
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Begin the development of the Spiral 3 SRP on the United States Marine Corps small form factor required platforms.					
FY 2018 Base Plans: Continue the development of the reduced form factor SRP for the identified platforms that cannot support the Spiral 2 form factor and field evaluation of the Spiral 2.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	1.657	1.639	0.000	1.639

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3371 / *MAGTF EW Interoperability Development*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

This project unit is part of United States Marine Corps led efforts to ensure Marine Corps requirements are included in the budget process for the Future Year Defense Program and beyond. This effort is for the Software Reprogrammable Payload. This program is part of the Marine Corps initial steps to create a common interoperable system to distribute multiple data types across the battle-space through spiral development.

E. Performance Metrics

Successful completion of the Spiral 2 development and demonstration onboard MV-22 test platform.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604273N *I (U)Executive Helo Development*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	650.892	490.768	338.357	451.938	-	451.938	248.962	190.668	85.321	56.438	218.200	2,731.544
3300: *Presidential Helicopter VH-92A*	650.892	490.768	338.357	451.938	-	451.938	248.962	167.801	60.839	31.468	0.000	2,441.025
3390: *VH-92A Improvements*	0.000	0.000	0.000	0.000	-	0.000	0.000	22.867	24.482	24.970	218.200	290.519

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 429

A. Mission Description and Budget Item Justification

The VH-92A is the replacement helicopter for the VH-3D and the VH-60N, the aircraft currently used by Marine Helicopter Squadron One (HMX-1) to transport the President, Vice President, and other distinguished officials as directed by the White House Military Office. The VH-3D and VH-60N are approaching the end of their service lives. Funding for the VH-92A program supports Engineering and Manufacturing Development Phase activities, including: integration of systems; production, qualification, and support of test articles; development of logistics products; and demonstration of system integration, interoperability, safety, and utility.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	507.093	338.357	478.404	-	478.404
Current President's Budget	490.768	338.357	451.938	-	451.938
Total Adjustments	-16.325	0.000	-26.466	-	-26.466
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-16.324	0.000			
• Program Adjustments	0.000	0.000	-26.800	-	-26.800
• Rate/Misc Adjustments	-0.001	0.000	0.334	-	0.334

Change Summary Explanation

PU: 3300

Cost: The program removed $26.800M from FY2018 to align funds with the work being performed in that fiscal year.

Technical: Not applicable.

Schedule: Not applicable.

Systems Engineering: Not applicable.

Logistics: Not applicable.

Contracting: Not applicable.

Deliveries:
System Demonstration Test Article (SDTA)
Low Rate Initial Production (LRIP)

1. LRIP Lot 1 extended to 1Q FY 2022.
2. EDM-1 delivery moved from 2Q FY 2018 to 3Q FY 2018; however, it is on schedule to deliver prior to the contract delivery date of 30 June 2018.

Test
1. Integrated Test & Evaluation moved from 2Q FY 2018 to 3Q FY 2018.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604273N / *(U)Executive Helo Development*	Project (Number/Name) 3300 / *Presidential Helicopter VH-92A*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3300: *Presidential Helicopter VH-92A*	650.892	490.768	338.357	451.938	-	451.938	248.962	167.801	60.839	31.468	0.000	2,441.025
Quantity of RDT&E Articles	2	2	2	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 429

A. Mission Description and Budget Item Justification

Marine Helicopter Squadron One (HMX-1) is required to provide safe and timely transportation for the President and Vice President of the United States, heads of state and others as directed by the White House Military Office. Currently two Type, Model, Series aircraft are used by HMX-1 for the Presidential support mission - the VH-3D and the VH-60N. The VH-92A will replace the VH-3D and VH-60N. Funding supports Engineering and Manufacturing Development Phase (EMD) activities including integration of systems, production, qualification, and support of test articles, logistics products development, demonstration of system integration, interoperability, safety and utility. Two Engineering Development Model (EDM) and four System Demonstration Test Article (SDTA) aircraft will be delivered during EMD. The EDM and SDTA aircraft will be used for Developmental Test & Evaluation for verification of Performance Based Specifications (PBS), airworthiness certification and Supportability Verification. The SDTA aircraft will be used for Initial Operational Test and Evaluation (IOT&E) and be refurbished for Initial Operational Capability (IOC).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development	460.645	291.208	399.949	0.000	399.949
Articles:	2	2	-	-	-
FY 2016 Accomplishments: Conduct system level Critical Design Review (CDR). Support engineering efforts for Mission Communication System (MCS) and hardware/software maturation. Continue Wideband Line of Sight (WBLoS) integration efforts. Continue providing government furnished equipment (GFE) to prime contractor. Conduct Training system Preliminary Design Review (PDR). Modify two engineering development model (EDM) aircraft to the VH-92A configuration. Execute other Engineering and Manufacturing Development (EMD) Phase activities, including: integration of systems; production, qualification, and support of test articles; development of logistics products; and demonstration of system integration, interoperability, safety, and utility.					
FY 2017 Plans: Begin Contractor Test (CT) for Federal Aviation Administration (FAA) airworthiness certification. Conduct Training system CDR. Continue engineering support for MCS and hardware/software maturation. Continue modification of two EDM aircraft and commence modification of SDTA aircraft to the VH-92A configuration. Continue providing GFE to prime contractor. Execute EMD Phase activities, including: integration of systems;					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604273N / *(U)Executive Helo Development*	**Project (Number/Name)** 3300 / *Presidential Helicopter VH-92A*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
production, qualification, and support of test articles; development of logistics products; and demonstration of system integration, interoperability, safety, and utility. ***FY 2018 Base Plans:*** Continue CT for FAA airworthiness certification. Conduct Production Readiness Review (PRR). Continue engineering support for MCS and hardware/software maturation. Finalize modification and delivery of two EDM aircraft. Continue modification of SDTA aircraft to the VH-92A configuration. Commence government led Integrated Test. Complete Ready-for-Training (RFT) to include the Maintenance Training Device (MTD), Flight Training Device (FTD), Systems Emulation Maintenance Trainer (SEMT) and courseware. Commence Contractor Logistics Support (CLS) at NAWCAD Patuxent River to support government led Integrated Test. Continue providing GFE to prime contractor. Execute EMD Phase activities, including: integration of systems; production, qualification, and support of test articles; development of logistics products; and demonstration of system integration, interoperability, safety, and utility. ***FY 2018 OCO Plans:*** N/A					
Title: Support	15.453	25.512	27.605	0.000	27.605
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue basic air vehicle VH-92A Interactive Electronic Technical Manual (IETM) development. Complete preliminary maintenance plans. Develop support equipment requirements data (SERDs). Procure common support equipment (CSE). Continue development of incremental products to include maintenance task analyses for individual systems of the aircraft. Continue the development and generation of logistics products to include Automated Logistics Environment (ALE), task analyses, maintenance summaries and IETMs. Continue support for programmatic and technical reviews. ***FY 2017 Plans:*** Finalize ALE product development in order to support Integrated Test in FY 2018. Commence ALE stand up at the Presidential Helicopter Support Facility and Marine Helicopter Squadron One (HMX-1). Continue basic air vehicle IETM development/verification and commence VH-92A specific IETM development. Continue development of SERDs. Continue procurement of CSE. Monitor new and modified support equipment development. Continue the development and generation of task analyses and maintenance summaries and					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604273N / *(U)Executive Helo Development*	**Project (Number/Name)** 3300 / *Presidential Helicopter VH-92A*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
IETMs. Support programmatic and technical reviews. Increase staffing to support VH-92A specific IETM development. ***FY 2018 Base Plans:*** Continue support of ALE product standup in order to support Integrated Test in FY 2018. Conduct Production Readiness Review (PRR). Continue to support procurement and delivery of CSE. Perform Support Equipment (SE) evaluations. Continue the development and generation of task analyses and maintenance summaries. Continue all IETM development/verification. Perform supportability test and evaluation, to include maintenance demonstrations. Support programmatic and technical reviews. ***FY 2018 OCO Plans:*** N/A					
Title: Test and Evaluation	8.375	15.237	17.028	0.000	17.028
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue support of VH-92A Developmental Test/Operational Test/Live Fire Test & Evaluation (DT/OT/LFT&E) test and evaluation planning and documentation. Continue System Integration Lab (SIL) development to include procurement of components for installation and integration. Continue LFT&E activities by procuring components, conducting LFT&E events, analyzing test result data, and generating requisite reports. ***FY 2017 Plans:*** Continue support of VH-92A DT/OT/LFT&E test and evaluation planning and documentation. Produce Integrated Test Plans, oversee contractor testing, support equipment evaluations/assessments, and instrumentation development/support. Commence detailed planning and preparation, engineering and flight test support for government led Integrated Test. Continue LFT&E events. Monitor contractor testing in support of airworthiness certification, specification compliance, and government verification planning. Finalize SIL build to support MCS software/hardware validation/verification. Commence cyber-testing and evaluation. Acquire additional spares for SIL. Commence preparation efforts for Test Readiness Review/Flight Readiness Review (TRR/FRR). ***FY 2018 Base Plans:*** Conduct TRR/FRR. Continue cyber-testing and evaluation, Performance Based Specification (PBS) compliance verification, support equipment evaluations/assessments, instrumentation development/support and Integrated Test support at the Presidential Helicopter Support Facility. Transition from contractor led to government led					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604273N / *(U)Executive Helo Development*	**Project (Number/Name)** 3300 / *Presidential Helicopter VH-92A*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Integrated Test. Conduct government led Integrated Test phase to include cybersecurity T&E and training systems assessment. Conduct Operational Assessment Maturity Review (OAMR). Conduct Operational Assessment. Produce test reports (Integrated Test, LFT&E) to support Operational Test and Milestone C. Continue to mature SIL and conduct software/hardware regression testing and validation/verification. Conduct maintenance on test bed aircraft and support equipment. ***FY 2018 OCO Plans:*** N/A					
Title: Program Management	6.295	6.400	7.356	0.000	7.356
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Participate in the Critical Design Review (CDR). Perform project management tasks to support technical reviews, risk-reduction activities, contractor deliverables, cost and schedule assessments, configuration management, training, physical security, and information assurance/cyber security. Conduct a Schedule Risk Assessment (SRA) and perform an Estimated At Complete (EAC) update. ***FY 2017 Plans:*** Perform project management tasks to support technical reviews, risk-reduction activities, contractor deliverables, configuration management, training, physical security, and information assurance/cybersecurity. Perform planned SRA and EAC update. ***FY 2018 Base Plans:*** Conduct Production Readiness Review (PRR). Perform project management tasks to support Milestone C preparation, technical reviews, risk-reduction activities, contractor deliverables, configuration management, training, physical security, and information assurance/cybersecurity. Perform planned SRA and EAC update. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	490.768	338.357	451.938	0.000	451.938

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604273N / *(U)Executive Helo Development*	**Project (Number/Name)** 3300 / *Presidential Helicopter VH-92A*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN-4/04550: *VH-92A Executive Helo*	0.000	0.000	0.000	-	0.000	684.987	694.780	750.183	0.000	0.000	2,129.950
• APN-6/04550: *Spares and Repair Parts*	0.000	0.000	0.000	-	0.000	54.462	80.215	65.704	0.000	0.000	200.381

Remarks

D. Acquisition Strategy

The VH-92A program is integrating mature subsystems into an existing commercial helicopter under a Fixed Price Incentive Firm (FPIF) contract. The program's Milestone (MS) B review was completed on 21 Mar 2014, the MS B Acquisition Decision Memorandum was signed on 17 Apr 2014, and the VH-92A contract for the Engineering and Manufacturing Development phase and priced options for production was awarded on 7 May 2014. The VH-92A Program successfully completed the System Preliminary Design Review on 21 August 2015.

E. Performance Metrics

Program performance metrics are contained in the Acquisition Program Baseline (APB) that was approved by the Milestone Decision Authority (USD(AT&L)) on 17 Apr 2014. The program conducted the Critical Design Review (CDR) in FY 2016. The program plans to conduct the Test Readiness Review, the Flight Readiness Review, and the Production Readiness Review in FY 2018.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604273N / *(U)Executive Helo Development*	**Project (Number/Name)** 3300 / *Presidential Helicopter VH-92A*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary HW Dev - VH-92A EMD Contract	C/FPIF	Sikorsky Aircraft Corporation : Stratford, CT	336.383	403.516	Oct 2015	228.859	Oct 2016	335.483	Oct 2017	-		335.483	186.208	1,490.449	1,490.449
Primary HW Dev - Advanced Capabilities	Various	NSMA : Arlington, VA	73.291	26.328	Feb 2016	36.855	Feb 2017	36.315	Feb 2018	-		36.315	150.942	323.731	-
Primary HW Dev - VH-92A MCS Design	WR	NAWCAD : St. Inigoes, MD	39.831	13.250	Nov 2015	4.769	Nov 2016	2.855	Nov 2017	-		2.855	9.939	70.644	-
Primary HW Dev - Wideband Line of Sight	MIPR	US Army : APG, MD	10.110	0.000		0.000		0.000		-		0.000	0.000	10.110	-
Primary HW Dev - VH-92A GFE	Various	Various : Various	3.400	1.307	Nov 2015	2.834	Nov 2016	5.023	Nov 2017	-		5.023	0.000	12.564	-
Systems Engineering	WR	NAWCAD : Patuxent River, MD	49.251	14.460	Nov 2015	16.295	Nov 2016	18.624	Nov 2017	-		18.624	40.079	138.709	-
Training	WR	NAWCTSD : Orlando, FL	1.005	1.785	Nov 2015	1.596	Nov 2016	1.649	Nov 2017	-		1.649	12.251	18.286	-
Prior year Hdw Dev cost no longer funded in the FYDP	Various	Various : Various	14.855	0.000		0.000		0.000		-		0.000	0.000	14.855	-
		Subtotal	528.126	460.646		291.208		399.949		-		399.949	399.419	2,079.348	-

Remarks

FUNDING PROFILE: Based on the updated estimates and schedules, the FY 2017 funding request was reduced by $210.1M to better align program funding with future work. The combined FY 2016 and FY 2017 Total Obligation Authority of $829.125M fully funded the program requirements in those fiscal years. The reduction in FY 2017 caused the appearance of a large increase in FY 2018. However, the funding in FY 2018 has remained constant and accurately aligns with the work being performed in FY 2018. In order to maintain the VH-92A program schedule, FY 2018 funds are required for the final modification of the two EDM aircraft, build of the four SDTA aircraft, government led integrated testing including the Test Readiness Review, Flight Readiness Review and the Production Readiness Review.
FINANCIAL PERFORMANCE: The VH-92A EMD is a FPIF contract with Performance Based Payments. The VH-92A program will lag OSD traditional expenditure benchmarks. The program must obligate 100 percent of the funding required by the contractor for incurred costs, termination liability, and profit. However, the program is limited to paying the contractor only 90 percent of the performance based costs and profit. Additionally, DCMA is withholding another 3 percent for contractor uncertified systems. Mandatory funding obligations and payment withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.

ACRONYMS:
EMD = Engineering & Manufacturing Development
MCS = Mission Communications System

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604273N / *(U)Executive Helo Development*	**Project (Number/Name)** 3300 / *Presidential Helicopter VH-92A*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GFE = Government Furnished Equipment															

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support - Common Support Equipment	Various	Various : Various	0.000	0.000	Apr 2016	0.923	Nov 2016	3.352	Nov 2017	-		3.352	0.000	4.275	-
Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	19.645	4.359	Nov 2015	11.121	Nov 2016	10.746	Nov 2017	-		10.746	16.360	62.231	-
Integrated Logistics Support	WR	FRC : Cherry Point, NC	4.675	5.658	Nov 2015	10.104	Nov 2016	10.007	Nov 2017	-		10.007	16.165	46.609	-
Integrated Logistics Support	WR	NAWCAD : Lakehurst, NJ	1.337	4.845	Nov 2015	1.205	Nov 2016	1.416	Nov 2017	-		1.416	3.215	12.018	-
Integrated Logistics Support	WR	SPAWAR : San Diego, CA	1.008	0.591	Nov 2015	2.159	Nov 2016	2.084	Nov 2017	-		2.084	2.116	7.958	-
Prior year support cost no longer funded in the FYDP	Various	Various : Various	5.589	0.000		0.000		0.000		-		0.000	0.000	5.589	-
		Subtotal	32.254	15.453		25.512		27.605		-		27.605	37.856	138.680	-

Remarks

Integrated Logistics Support - Common Support Equipment (Various) - Government support equipment development/procurement.
Integrated Logistics Support (NAWCAD Patuxent River) - Integrated logistics support (ILS) acquisition and management of the VH-92A aircraft. Evaluate contractor development of ILS efforts, Supportability Test & Evaluation, Intermediate & Depot level repair capability development.
Integrated Logistics Support (FRC Cherry Point) - VH-92A maintenance planning, reliability centered maintenance (RCM), logistics support analysis efforts, level of repair analysis and IETMS development.
Integrated Logistics Support (NAWCAD Lakehurst) - Support Equipment planning and analysis to include procurement of Common Support Equipment (CSE), development of SERDs and logistics support products for SE and SE test and evaluation.
Integrated Logistics Support (SPAWAR San Diego) - Architecture development and software integration to include certification and accreditation of the VH-92A Automated Logistics Environment.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604273N / *(U)Executive Helo Development*	**Project (Number/Name)** 3300 / *Presidential Helicopter VH-92A*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	WR	NAWCAD : Patuxent River, MD	9.454	4.112	Nov 2015	8.509	Nov 2016	14.113	Nov 2017	-		14.113	49.878	86.066	-
Development Test & Evaluation	WR	NAWCWD : Point Mugu, CA	0.087	0.007	Nov 2015	0.013	Nov 2016	0.014	Nov 2017	-		0.014	0.042	0.163	-
Development Test & Evaluation	MIPR	JITC : Ft. Huachuca, AZ	0.032	0.024	Oct 2015	0.025	Oct 2016	0.045	Oct 2017	-		0.045	0.158	0.284	-
Live Fire Test & Evaluation	WR	NAWCWD : China Lake, CA	4.459	3.330	Nov 2015	5.530	Nov 2016	1.614	Nov 2017	-		1.614	3.282	18.215	-
Operational Test & Evaluation	WR	COTF : Norfolk, VA	0.844	0.901	May 2016	1.160	May 2017	1.242	May 2018	-		1.242	1.543	5.690	-
		Subtotal	14.876	8.374		15.237		17.028		-		17.028	54.903	110.418	-

Remarks

Development Test & Evaluation (NAWCAD Patuxent River) - Support for developmental test & evaluation, government led Integrated Test, system integration lab, T&E instrumentation design, procurement, calibration, and tooling, aircraft and support equipment maintenance.
Development Test & Evaluation (NAWCWD Point Mugu) - Cyber Security T&E.
Development Test & Evaluation (JITC) - Joint Interoperability Test Certification.
Live Fire Test & Evaluation (NAWCWD China Lake) - LFT&E test planning/documentation and conduct of LFT&E test events.
Operational Test & Evaluation (COTF) - Technical and engineering support in support of Operational Test and Integrated Test and evaluation of the VH-92A aircraft. Support efforts include documentation review, test planning, operational test design, test analysis and reporting and test operations.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD : Patuxent River, MD	48.103	6.095	Nov 2015	6.300	Nov 2016	7.256	Nov 2017	-		7.256	16.485	84.239	-
Transportation	Various	NAVAIR : Patuxent River, MD	0.185	0.100	Oct 2015	0.025	Oct 2016	0.025	Oct 2017	-		0.025	0.100	0.435	-
Travel	Various	NAVAIR : Patuxent River, MD	0.249	0.100	Oct 2015	0.075	Oct 2016	0.075	Oct 2017	-		0.075	0.307	0.806	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604273N / *(U)Executive Helo Development*	**Project (Number/Name)** 3300 / *Presidential Helicopter VH-92A*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior year Mgmt Svcs cost no longer funded in the FYDP	Various	Various : Various	27.099	0.000		0.000		0.000		-		0.000	0.000	27.099	-
		Subtotal	75.636	6.295		6.400		7.356		-		7.356	16.892	112.579	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	650.892	490.768		338.357		451.938		-		451.938	509.070	2,441.025	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604273N / *(U)Executive Helo Development*	**Project (Number/Name)** 3300 / *Presidential Helicopter VH-92A*

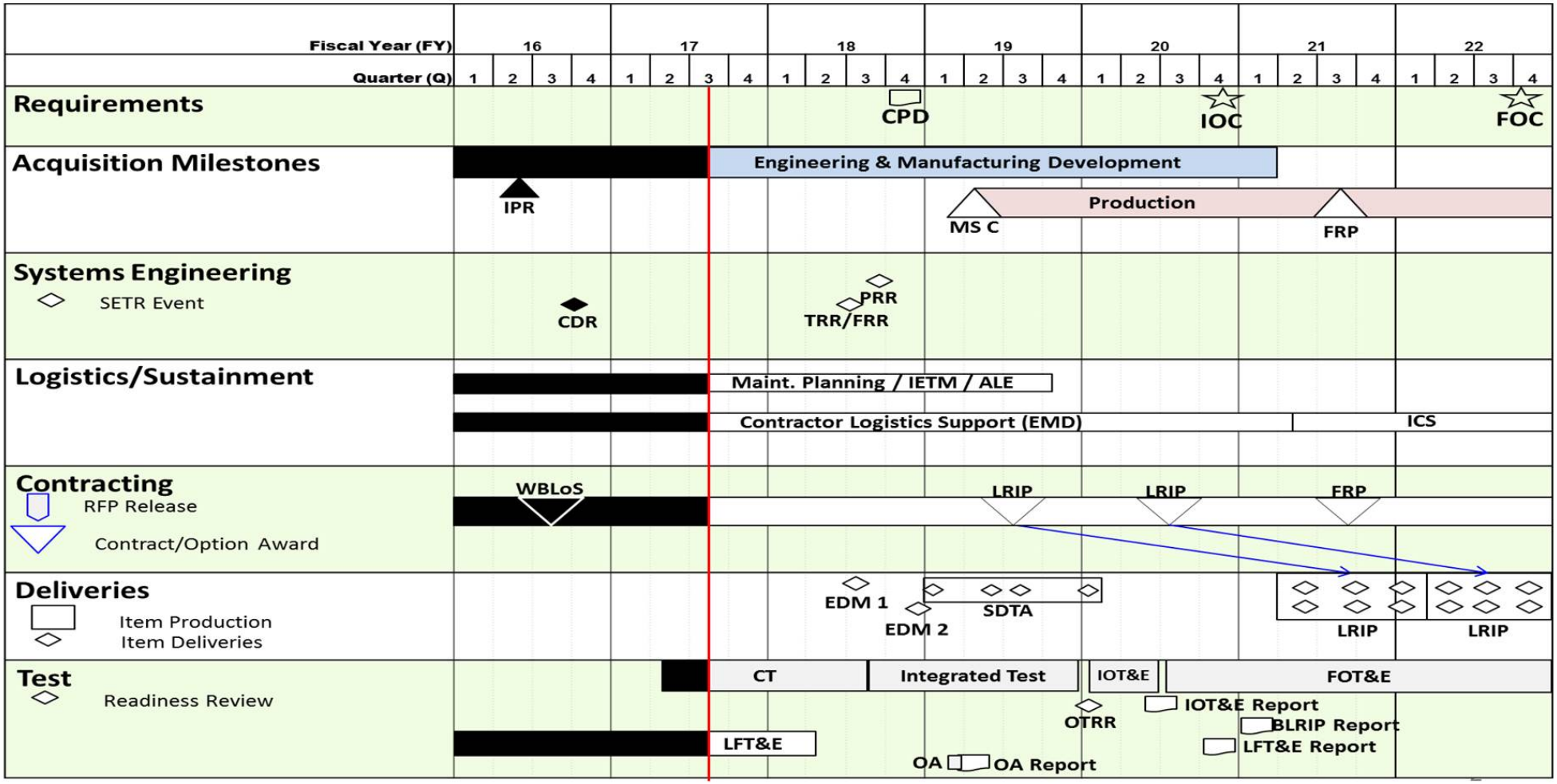


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604273N / *(U)Executive Helo Development*	**Project (Number/Name)** 3300 / *Presidential Helicopter VH-92A*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Presidential Helicopter VH-92A				
Requirements: Capabilities Production Document	4	2018	4	2018
Requirements: Initial Operational Capability	4	2020	4	2020
Requirements: Full Operational Capability	4	2022	4	2022
Acquisition Milestones: Engineering & Manufacturing Development	1	2016	1	2021
Acquisition Milestones: Production	2	2019	4	2022
Acquisition Milestones: In Process Review	2	2016	2	2016
Acquisition Milestones: MS C	2	2019	2	2019
Acquisition Milestones: Full Rate Production Decision	3	2021	3	2021
Systems Engineering: Critical Design Review	4	2016	4	2016
Systems Engineering: Test Readiness Review/Flight Readiness Review (TRR/FRR)	3	2018	3	2018
Systems Engineering: Production Readiness Review	3	2018	3	2018
Logistics/Sustainment: Maintenance Planning / IETM / ALE	1	2016	4	2019
Logistics/Sustainment: Contractor Logistics Support (EMD)	1	2016	2	2021
Logistics/Sustainment: Interim Contractor Support	2	2021	4	2022
Contracting: Wideband Line of Sight	3	2016	3	2016
Contracting: LRIP Lot 1 APN	3	2019	3	2019
Contracting: LRIP Lot 2 APN	3	2020	3	2020
Contracting: FRP APN	3	2021	3	2021
Deliveries: EDM 1	3	2018	3	2018
Deliveries: EDM 2	4	2018	4	2018
Deliveries: System Demonstration Test Article (SDTA) Aircraft 1	1	2019	1	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604273N / *(U)Executive Helo Development*	**Project (Number/Name)** 3300 / *Presidential Helicopter VH-92A*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Deliveries: System Demonstration Test Article (SDTA) Aircraft 2	2	2019	2	2019
Deliveries: System Demonstration Test Article (SDTA) Aircraft 3	3	2019	3	2019
Deliveries: System Demonstration Test Article (SDTA) Aircraft 4	1	2020	1	2020
Deliveries: Low Rate Initial Production - Lot 1 (APN)	2	2021	1	2022
Deliveries: Low Rate Initial Production - Lot 2 (APN)	2	2022	4	2022
Test: Developmental Test - Contractor Test	2	2017	3	2018
Test: Developmental Test - Integrated Test	3	2018	4	2019
Test: Live Fire Test & Evaluation	1	2016	2	2018
Test: Live Fire Test & Evaluation Report	4	2020	4	2020
Test: Operational Assessment & Operational Assessment Report	2	2019	2	2019
Test: Operational Test Readiness Review	1	2020	1	2020
Test: Initial Operational Test & Evaluation	1	2020	2	2020
Test: Initial Operational Test & Evaluation Report	2	2020	3	2020
Test: Follow-on Test & Evaluation	3	2020	4	2022
Test: Beyond Low Rate Initial Production Report	1	2021	1	2021

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604273N / *(U)Executive Helo Development*	Project (Number/Name) 3390 / *VH-92A Improvements*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3390: *VH-92A Improvements*	0.000	0.000	0.000	0.000	-	0.000	0.000	22.867	24.482	24.970	218.200	290.519
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

VH-92A Product Improvement addresses pre-planned product improvement requirements written into the VXX Capabilities Development Document approved by Joint Requirements Oversight Committee in Jan 2013. The VH-92A Improvement project provides near and long term improvements to the fleet, focusing on documented deficiencies related to mission systems, maintainability and reliability; updates mission communication system based on new required capabilities and obsolescence issues. The project addresses development associated with Mission Communications System upgrades (both software and hardware), enhancements to Wideband Line of Sight, enhanced visual system, and cockpit upgrades.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604274N *I Next Generation Jammer (NGJ)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	881.719	376.548	577.822	632.936	-	632.936	539.770	395.996	174.427	0.000	0.000	3,579.218
0557: *Next Generation Jammer*	881.719	376.548	577.822	632.936	-	632.936	539.770	395.996	174.427	0.000	0.000	3,579.218
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** P445												

A. Mission Description and Budget Item Justification

The Next Generation Jammer Increment 1 (NGJ Inc 1) Mid-Band is the next step in the evolution of Airborne Electronic Attack (AEA) and is needed to meet current and emerging Electronic Warfare gaps, ensure kill chain wholeness against growing threat capabilities and capacity, and keep pace with threat weapons systems advances and continuous expansion of the AEA mission area. Next Generation Jammer is an evolutionary acquisition program providing capability in three increments: Increment 1 (Mid-Band), Increment 2 (Low-Band) funded under PE 0604282N, and Increment 3 (High-Band) which is currently unfunded. The order of development - mid, low, and then high - was determined by the threat and available capability.

NGJ Inc 1 capabilities will address Mid-Band AEA capability gaps, AEA sufficiency gaps, and address AN/ALQ-99 Tactical Jamming System shortfalls in scalability, flexibility, supportability, interoperability, availability, and capability.

NGJ Inc 1 will deliver significantly improved radar and communications jamming capabilities with Open Systems Architecture that supports software and hardware updates to rapidly counter improving threats. NGJ Inc 1 will contribute across the spectrum of missions defined in the Defense Strategic Guidance to include strike warfare, projecting power despite anti-access/area denial challenges, and counterinsurgency/irregular warfare.

B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	387.770	577.822	544.124	-	544.124
Current President's Budget	376.548	577.822	632.936	-	632.936
Total Adjustments	-11.222	0.000	88.812	-	88.812
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-11.222	0.000			
• Program Adjustments	0.000	0.000	87.929	-	87.929
• Rate/Misc Adjustments	0.000	0.000	0.883	-	0.883

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604274N *I Next Generation Jammer (NGJ)*

Change Summary Explanation

Technical: Not applicable.

Schedule: Project Unit 0557: Integrated Testing moved from 3rd Qtr. 2016 to 2nd Qtr. 2017 due to test vehicle availability.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604274N / *Next Generation Jammer (NGJ)*	Project (Number/Name) 0557 / *Next Generation Jammer*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0557: *Next Generation Jammer*	881.719	376.548	577.822	632.936	-	632.936	539.770	395.996	174.427	0.000	0.000	3,579.218
Quantity of RDT&E Articles		15	-	-	-	-	4	-	-	-		

Project MDAP/MAIS Code: P445

A. Mission Description and Budget Item Justification

The Next Generation Jammer Increment 1 (NGJ Inc 1) capabilities will address Mid-Band Airborne Electronic Attack (AEA) capability gaps, AEA sufficiency gaps, and address AN/ALQ-99 Tactical Jamming System shortfalls in scalability, flexibility, supportability, interoperability, availability, and capability. NGJ Inc 1 will deliver significantly improved radar and communications jamming capabilities with Open Systems Architecture that supports software and hardware updates to rapidly counter improving threats. NGJ Inc 1 will contribute across the spectrum of missions defined in the Defense Strategic Guidance to include strike warfare, projecting power despite anti-access/area denial challenges, and counterinsurgency/irregular warfare.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Next Generation Jammer Increment 1 Primary Hardware Development	209.534	383.585	364.311	0.000	364.311
Articles:	15	-	-	-	-

FY 2016 Accomplishments:

Continued maturation of Critical Technology Elements (CTEs) to a Technology Readiness of 6 in support of Milestone B. Awarded Engineering and Manufacturing Development Contract in 3rd Qtr. FY 2016. Post Milestone B work focused on continuing maturation of technologies and maturation of the system design of the Pod Prime Hardware in preparation for Critical Design Review in 3rd Qtr. FY 2017 and the ordering of material in support of fifteen (15) Engineering Development Models test article builds.

FY 2017 Plans:

System design of the Pod Prime Hardware will continue through the Critical Design Review (CDR) in 3rd Qtr. FY 2017. Upon a successful CDR, the remaining pod hardware will be procured and the assembly will commence for the fifteen (15) Engineering Development Models. Also during this time aeromechanical shapes are being developed to support the air worthiness testing during the integrated test phases (IT-B1 and IT-B2).

FY 2018 Base Plans:

Delivery of initial aeromechanical test shapes (Pods) to support air worthiness flight testing. Ongoing assembly and integration of the fifteen (15) Engineering Development Models.

FY 2018 OCO Plans:

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604274N / *Next Generation Jammer (NGJ)*	**Project (Number/Name)** 0557 / *Next Generation Jammer*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: Next Generation Jammer Increment 1 Systems Engineering	46.298	48.599	50.621	0.000	50.621
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Performed System Engineering efforts in support of continued Next General Jammer Increment 1 development to include initial system security engineering development activities culminating in a Critical Design Review in 3rd Qtr. FY 2017. A Technology Readiness Assessment was performed during this timeframe, where the Technology Readiness Level (TRL) of the NGJ Critical Technology Elements (CTEs) was determined.					
FY 2017 Plans: Perform Systems Engineering efforts, resulting in a Critical Design Review in 3rd Qtr. FY 2017, which will support development of the Engineering Development Models (EDMs) required for Developmental Testing. Systems engineering efforts will also be supporting the Integration Readiness Review (IRR) and the Test Readiness Review (TRR), to include update and traceability of specifications, event planning, execution, and closeout of Request For Action (RFAs) and Request for Information (RFIs).					
FY 2018 Base Plans: Perform Systems Engineering efforts, which will support the Aeromechanical Pod TRR 2nd Qtr. FY 2018 and the Flight Readiness Review (FRR) 4th Qtr. FY 2018. System engineering efforts will also support Systems Integration Lab testing at government and contractor facilities.					
FY 2018 OCO Plans: N/A					
Title: Next Generation Jammer Increment 1 Aircraft Integration	87.676	93.069	127.122	0.000	127.122
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Developed, designed, procured, and tested A-kit modifications and initiated flight clearance work in support of Milestone B (MS B) program requirements and testing activities. Efforts included non-recurring engineering for proposed aircraft modifications, finalization of software requirements for the Next Generation Jammer (NGJ) integration software build, and commencement of software development.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604274N / *Next Generation Jammer (NGJ)*	**Project (Number/Name)** 0557 / *Next Generation Jammer*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Simultaneously working on three System Configuration Set (SCS) software builds in various stages, System Integration of Build #1, Design of Build #2, and System Specification and Design of Build #3. Conduct System Engineering reviews, Software Integration Lab (SIL) testing, and flight testing associated with each phase. Continuation of A-kit modification activities to include assembly of A-kits. ***FY 2018 Base Plans:*** Continue working on three System Configuration Set (SCS) software builds in various stages, finish the System Integration phase of Build #1, finish the Design phase and start the System Integration phase of Build #2, and conduct the Design phase and the System Integration phases of Build #3. Installation of the first modification kits into the initial aircraft to be used for testing Next Generation Jammer Increment 1. Finalize and deliver wind tunnel reports for the performance aeromechanical high speed wind tunnel test, stores separation wind tunnel test, and the high lift, low speed wind tunnel test. ***FY 2018 OCO Plans:*** N/A					
Title: Next Generation Jammer Increment 1 Test and Evaluation	29.313	48.283	86.730	0.000	86.730
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Developed Test Evaluation Master Plan for Milestone B. A static loads test article was prepared in support of initiation of static loads testing. The Integrated Test Team (ITT) started build up in the aeromechanical disciplines and the flutter A/C was modified in support of flutter testing. ***FY 2017 Plans:*** Conduct High Speed Stability and Control (S&C) and Performance, Low Speed Performance, and Loads and Stores Separation wind tunnel testing. Develop wind tunnel test reports. A static loads test article will be delivered in support of initiation of static loads testing. Flutter, loads, noise and vibration, flying qualities, and jettison test articles will be developed and prepared in support of aeromechanical flight testing. Prepare the Flutter Test Aircraft to include reconfiguration with wing-tip ALQ-218 mass property models to represent an EA-18G and instrumentation modifications. Conduct Flutter Test Aircraft regression testing to include regression Ground Vibration Test (GVT) and regression GVT analysis. The Integrated Test Team (ITT) will start build up in the mission systems disciplines in support of chamber, ground, and flight testing for installed system performance characterization. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604274N / *Next Generation Jammer (NGJ)*	**Project (Number/Name)** 0557 / *Next Generation Jammer*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Complete High Speed Stability and Control, High and Low Speed Performance, and Loads/Stores wind tunnel test reports. Plan, conduct and report Ram Air Turbine Generator (RATG) performance testing and NGJ pod static loads testing. Complete Regression Ground Vibration Testing (RGVT) analysis and initiate regression flights on flutter instrumented aircraft. Plan, conduct and report on Ground Vibration Testing (GVT) on flutter instrumented aircraft. Calibrate sensors for stores load testing. Instrument an F/A-18E to support store loads testing. Instrument an F/A-18F for flying qualities and stability and control testing. Plan and initiate captive carriage flight test for weapons separation testing. Modify and instrument EA-1 and EA-2 for Next Generation Jammer to support regression flight testing. Plan and initiate AN/ALQ-99 and NGJ regression flight testing. Instrument two EA-18G aircraft to support mission systems ground and flight test. Finalize NGJ Mission Systems Test Planning for installed system performance characterization that includes System Performance Specification verification, EA-18G Airborne Electronic Attack systems integration, regression interoperability, software integration and functionality, Electromagnetic Environmental Effects, assignment control, frequency and spatial coverage, beam capacity, beam switching, beam stabilization, Effective Isotropic Radiated Power, antenna patterns, receive functionality, technique generation and management, Crew Vehicle Interface, aircrew workload, safety, mission planning, cybersecurity, reliability, maintainability, ground support equipment, and environmental qualifications. ***FY 2018 OCO Plans:*** N/A					
Title: Next Generation Jammer Increment 1 Support & Management Services	3.727	4.286	4.152	0.000	4.152
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Provided Support and Management Services associated with the Next Generation Jammer Program. ***FY 2017 Plans:*** Provide Support and Management Services associated with the Next Generation Jammer Program. ***FY 2018 Base Plans:*** Provide Support and Management Services associated with the Next Generation Jammer Program. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	376.548	577.822	632.936	0.000	632.936

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604274N / *Next Generation Jammer (NGJ)*	**Project (Number/Name)** 0557 / *Next Generation Jammer*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0591: *Next Generation Jammer*	0.000	0.000	0.000	-	0.000	153.071	342.950	456.970	524.218	3,328.046	4,805.255
• APN/0605: *Spares and Repair Parts*	0.000	0.000	0.000	-	0.000	27.543	27.811	28.048	0.000	0.000	83.402

Remarks

D. Acquisition Strategy

Next Generation Jammer is designated an Acquisition Category 1D Major Defense Acquisition Program (MDAP), MDAP program number 445. The activity will focus on Engineering and Manufacturing Development (EMD) phase completing the design of the pod and building fifteen (15) Engineering Development Model (EDM) pods for developmental test. The EMD phase will complete with an operational assessment followed by a Milestone C decision and Low Rate Initial Production (LRIP).

E. Performance Metrics

The Engineering and Manufacturing Development (EMD) phase completes the pod design which culminates with the system Critical Design Review (CDR) 3rd Qtr. FY 2017. First flight of an aeromechanical developmental test shape is scheduled for 4th Qtr. FY 2018.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604274N / *Next Generation Jammer (NGJ)*	Project (Number/Name) 0557 / *Next Generation Jammer*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development - Technology Development	C/CPIF	Raytheon : El Segundo, CA	274.357	30.932	Oct 2015	0.000		0.000		-		0.000	0.000	305.289	305.289
Primary Hardware Development - Engineering and Manufacturing Development	C/CPIF	Raytheon : El Segundo, CA	0.000	178.602	Apr 2016	383.585	Oct 2016	364.311	Oct 2017	-		364.311	527.047	1,453.545	1,453.545
Aircraft Integration	SS/CPIF	Boeing : St. Louis, MO	21.912	6.722	Dec 2015	0.000		0.000		-		0.000	0.000	28.634	28.634
Aircraft Integration - EMD	C/CPIF	Boeing : St. Louis, MO	0.000	7.191	Jun 2016	29.193	Dec 2016	41.223	Dec 2017	-		41.223	72.262	149.869	149.869
Aircraft Integration - FCNS	SS/FFP	Harris : Palm Bay, FL	6.099	4.255	Jul 2016	0.000		0.000		-		0.000	0.000	10.354	10.354
Software /Aircraft Integration	WR	NAWCWD : China Lake, CA	15.707	5.932	Nov 2015	7.821	Nov 2016	7.477	Nov 2017	-		7.477	22.599	59.536	-
Software Integration - Systems Integration Lab	Various	NAVSUP : Philadelphia, PA	2.738	32.598	Feb 2016	0.000		0.000		-		0.000	0.000	35.336	35.336
Software Integration- Systems Integration Lab	SS/FFP	Northrop Grumman : Bethpage. NY	29.849	0.000		0.000		1.955	Feb 2018	-		1.955	2.990	34.794	34.794
Software Integration - SOR	C/CPIF	Boeing : St. Louis, MO	24.164	1.535	Mar 2016	1.130	Dec 2016	1.157	Oct 2017	-		1.157	0.795	28.781	28.781
Software Integration - Blk Update	WR	NAWCWD : Pt. Mugu, CA	18.481	11.927	Nov 2015	13.354	Nov 2016	13.772	Nov 2017	-		13.772	31.763	89.297	-
Software integration H-16	C/CPIF	Boeing : St Louis, MO	0.000	10.524	Oct 2015	27.500	Dec 2016	41.226	Oct 2017	-		41.226	14.440	93.690	93.690
Software Integration H-16	SS/FFP	Northrup Grumman : Bethpage, NY	0.000	6.706	Dec 2015	12.555	Dec 2016	15.976	Dec 2017	-		15.976	24.460	59.697	59.697
Software Integration H-16	WR	NAWCWD : China Lake	0.000	0.286	Nov 2015	1.516	Nov 2016	0.870	Nov 2017	-		0.870	1.332	4.004	-
Systems Engineering Trainer	Various	TBD : TBD	0.000	0.000		0.000		3.466	Nov 2017	-		3.466	3.543	7.009	-
Systems Engineering	WR	NAWCAD : Patuxent River, MD	80.893	19.779	Nov 2015	21.238	Nov 2016	20.668	Nov 2017	-		20.668	20.986	163.564	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604274N / *Next Generation Jammer (NGJ)*	**Project (Number/Name)** 0557 / *Next Generation Jammer*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCWD : Pt. Mugu, CA	37.924	9.079	Nov 2015	9.615	Nov 2016	8.681	Nov 2017	-		8.681	20.220	85.519	-
Systems Engineering	WR	NSWC Crane : Crane, IN	28.412	3.692	Nov 2015	4.258	Nov 2016	3.842	Nov 2017	-		3.842	5.742	45.946	-
Systems Engineering	WR	NSWC Dahlgren : Dahlgren, VA	3.984	0.167	Nov 2015	0.102	Nov 2016	0.104	Nov 2017	-		0.104	0.325	4.682	-
Systems Engineering	SS/CPFF	Johns Hopkins University Applied Physics Lab : Laurel, MD	27.958	11.109	Nov 2015	9.833	Feb 2017	10.030	Feb 2018	-		10.030	28.737	87.667	87.667
Systems Engineering	WR	Naval Research Laboratory : Washington, DC	3.940	0.686	Nov 2015	0.642	Nov 2016	0.655	Nov 2017	-		0.655	1.412	7.335	-
Systems Engineering	Various	Various : Various	9.554	0.500	Nov 2015	0.015	Nov 2016	0.015	Nov 2017	-		0.015	0.048	10.132	-
Systems Engineering	SS/FFP	NSMA : Arlington, VA	0.000	1.286	Feb 2016	2.896	Apr 2017	6.626	Feb 2018	-		6.626	10.245	21.053	21.053
Prior Year Prod Dev no longer funded in FYDP	Various	Various : Various	261.711	0.000		0.000		0.000		-		0.000	0.000	261.711	-
		Subtotal	847.683	343.508		525.253		542.054		-		542.054	788.946	3,047.444	-

Remarks

Engineering Manufacturing Development (EMD) Aircraft Integration award and increase from FY 2017 to FY 2018 due to phasing of Aircraft Integration efforts.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Eng & Tech Srvc (Non FFRDC)	Various	Various : Various	30.460	3.541	Dec 2015	4.006	Dec 2016	3.866	Dec 2017	-		3.866	4.531	46.404	46.404
		Subtotal	30.460	3.541		4.006		3.866		-		3.866	4.531	46.404	46.404

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604274N / *Next Generation Jammer (NGJ)*	Project (Number/Name) 0557 / *Next Generation Jammer*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development T & E	WR	NAWCAD : Patuxent River, MD	0.000	21.563	Nov 2015	27.899	Nov 2016	53.833	Nov 2017	-		53.833	233.396	336.691	-
Development T & E Flight Instrumentation	C/IDIQ	Teletronics : Newton, PA	0.000	2.620	Jul 2016	0.000		0.000		-		0.000	0.000	2.620	2.620
Development T & E Flight	SS/FFP	NSMA : Arlington, VA	0.000	2.943	Jul 2016	0.000		0.000		-		0.000	0.000	2.943	2.943
Development T & E	Various	Boeing : St Louis, MO	0.000	2.187	Mar 2016	13.720	Dec 2016	21.714	Oct 2017	-		21.714	33.800	71.421	71.421
Development T & E	Various	Boeing : St Louis MO	0.000	0.000		0.000		9.850	Dec 2017	-		9.850	27.564	37.414	37.414
Development T & E - Wind Tunnel	WR	Various : AEDC	2.413	0.000		3.860	Nov 2016	0.000		-		0.000	0.000	6.273	-
Development T & E - Wind Tunnel	WR	Various : NASA AMES	0.000	0.000		2.804	Jan 2017	0.000		-		0.000	0.000	2.804	-
Test OT	Various	Various : Various	0.000	0.000		0.000		1.333	Mar 2018	-		1.333	21.064	22.397	-
Prior year T&E no longer funded in the FYDP	Various	Various : Various	0.558	0.000		0.000		0.000		-		0.000	0.000	0.558	-
		Subtotal	2.971	29.313		48.283		86.730		-		86.730	315.824	483.121	-

Remarks

Engineering Manufacturing Development (EMD) award ramp up from FY 2017 to FY 2018 start of Integrated Testing.

Management Services ($ in Millions)

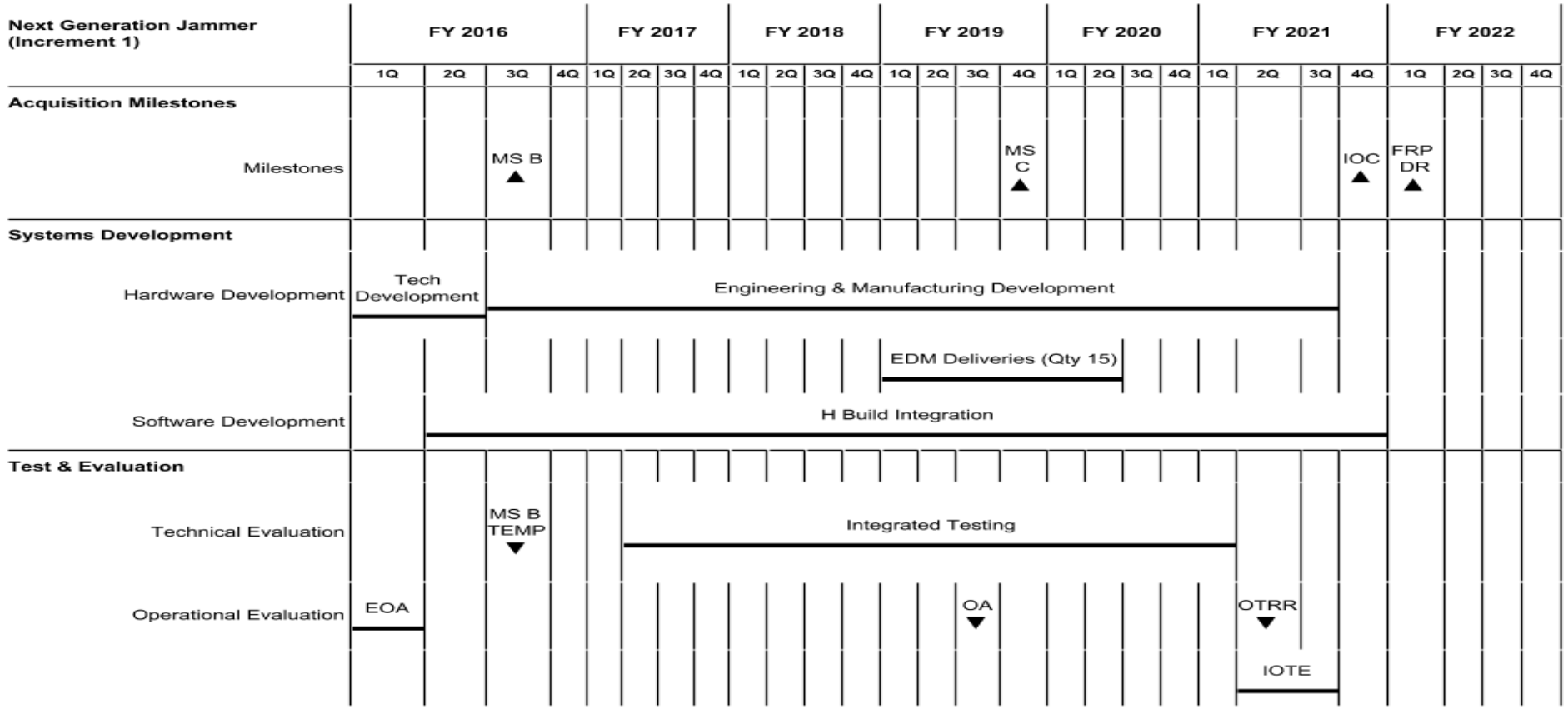
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	WR	Various : Various	0.598	0.186	Oct 2015	0.280	Oct 2016	0.286	Oct 2017	-		0.286	0.892	2.242	-
Prior years Mgmt Svcs no longer funded in the FYDP	WR	Various : Various	0.007	0.000		0.000		0.000		-		0.000	0.000	0.007	-
		Subtotal	0.605	0.186		0.280		0.286		-		0.286	0.892	2.249	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604274N / *Next Generation Jammer (NGJ)*	Project (Number/Name) 0557 / *Next Generation Jammer*	

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	881.719	376.548		577.822		632.936		-		632.936	1,110.193	3,579.218	-

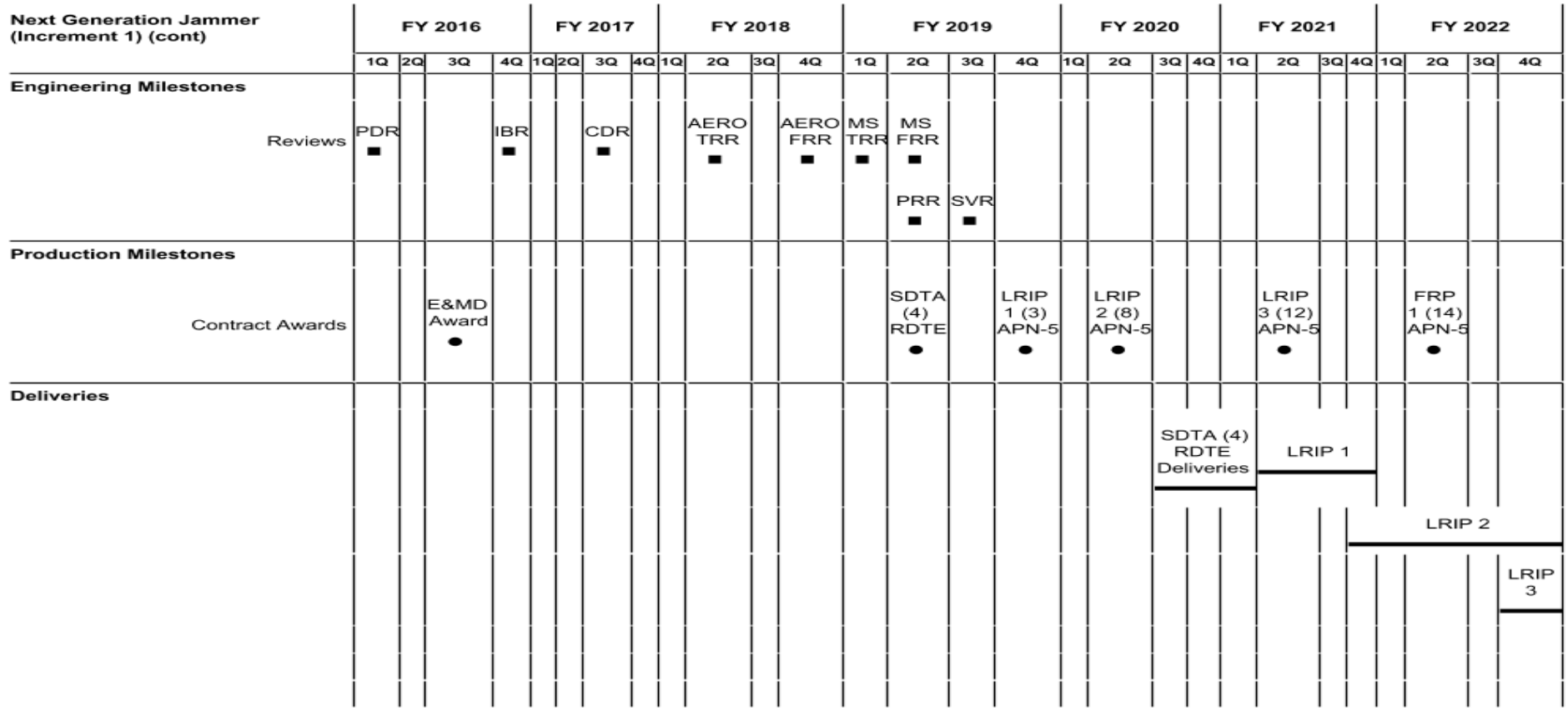
Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604274N / *Next Generation Jammer (NGJ)*	**Project (Number/Name)** 0557 / *Next Generation Jammer*



2018OSD - 0604274N - 0557

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604274N / *Next Generation Jammer (NGJ)*	**Project (Number/Name)** 0557 / *Next Generation Jammer*



2018OSD - 0604274N - 0557

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604274N / *Next Generation Jammer (NGJ)*	**Project (Number/Name)** 0557 / *Next Generation Jammer*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Next Generation Jammer (Increment 1)				
Acquisition Milestones: Milestones: Milestone B	3	2016	3	2016
Acquisition Milestones: Milestones: Milestone C	4	2019	4	2019
Acquisition Milestones: Milestones: Initital Operational Capability	4	2021	4	2021
Acquisition Milestones: Milestones: Full Rate Production Decision Review	1	2022	1	2022
Systems Development: Hardware Development: Technology Development	1	2016	2	2016
Systems Development: Hardware Development: Engineering & Manufacturing Development	3	2016	3	2021
Systems Development: Hardware Development: Engineering Development Model Deliveries	1	2019	2	2020
Systems Development: Software Development: H Build Integration	2	2016	4	2021
Test & Evaluation: Technical Evaluation: Milestone B Test & Evaluation Master Plan	3	2016	3	2016
Test & Evaluation: Technical Evaluation: Integrated Testing	2	2017	1	2021
Test & Evaluation: Operational Evaluation: Early Operational Assessment	1	2016	1	2016
Test & Evaluation: Operational Evaluation: Operational Assessment	3	2019	3	2019
Test & Evaluation: Operational Evaluation: Operational Test Readiness Review	2	2021	2	2021
Test & Evaluation: Operational Evaluation: Intial Operational Test & Evaluation	2	2021	3	2021
Next Generation Jammer (Increment 1) (cont)				
Engineering Milestones: Reviews: Preliminary Design Review	1	2016	1	2016
Engineering Milestones: Reviews: Integrated Baseline Review	4	2016	4	2016
Engineering Milestones: Reviews: Critical Design Review	3	2017	3	2017
Engineering Milestones: Reviews: AERO Test Readiness Review	2	2018	2	2018
Engineering Milestones: Reviews: AERO Flight Readiness Review	4	2018	4	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604274N / *Next Generation Jammer (NGJ)*	**Project (Number/Name)** 0557 / *Next Generation Jammer*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Engineering Milestones: Reviews: MS Test Readiness Review	1	2019	1	2019
Engineering Milestones: Reviews: MS Flight Readiness Review	2	2019	2	2019
Engineering Milestones: Reviews: Production Readiness Review	2	2019	2	2019
Engineering Milestones: Reviews: System Verification Review	3	2019	3	2019
Production Milestones: Contract Awards: Engineering & Manufacturing Development Contract Award	3	2016	3	2016
Production Milestones: Contract Awards: System Demonstration Test Article RDTEN Contract Award	2	2019	2	2019
Production Milestones: Contract Awards: Low Rate Initial Production 1 APN-5 Contract Award	4	2019	4	2019
Production Milestones: Contract Awards: Low Rate Initial Production 2 APN-5 Contract Award	2	2020	2	2020
Production Milestones: Contract Awards: Low Rate Initial Production 3 APN-5 Contract Award	2	2021	2	2021
Production Milestones: Contract Awards: Full Rate Production 1 APN-5 Contract Award	2	2022	2	2022
Deliveries: System Demonstration Test Article RDTEN Deliveries	3	2020	1	2021
Deliveries: LRIP 1 Deliveries	2	2021	4	2021
Deliveries: LRIP 2 Deliveries	4	2021	4	2022
Deliveries: LRIP 3 Deliveries	4	2022	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604280N *I JT Tact Radio Sys (JTRS)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	14.578	24.300	2.365	4.310	-	4.310	0.015	0.017	6.522	6.522	Continuing	Continuing
3078: *Digital Modular Radio*	14.578	24.300	2.365	4.310	-	4.310	0.015	0.017	6.522	6.522	Continuing	Continuing

A. Mission Description and Budget Item Justification

Digital Modular Radio (DMR) with Integrated Waveform (IW) and Mobile User Objective System (MUOS) capable hardware is the Navy's technical solution for the IW/ MUOS requirement. The DMR AN/USC-61(C), is the first software defined radio to have become a communications system standard for the U.S. Military. The compact, multi-channel DMR provides multiple waveforms and multi-level information security for voice and data communications. DMR radios currently operate aboard U.S. Navy surface and subsurface vessels, fixed-sites and other Department of Defense communication platforms using frequencies ranging from 2 MHz to 2 GHz. Certified to pass secure voice and data at Multiple Independent Levels of Security (MILS) over High Frequency (HF), Very High Frequency (VHF), Ultra High Frequency (UHF), and Satellite Communications (SATCOM) channels, the DMR system was developed to the U.S. Navy's specifications and meets all the stringent environmental, Electromagnetic Interference (EMI) and performance requirements for use in the U.S. Fleet. This task is for the continued development/integration of the IW and MUOS waveforms into the DMR in accordance with Military Standards 188-181,2,3, and the High Frequency Distribution Amplifier Group (HFDAG). IW uses a Time Division Multiple Access (TDMA) communication system in an attempt to improve satellite bandwidth utilization over legacy SATCOM waveforms. This enables demand assigned services on UHF SATCOM networks to support new applications that require better performance and higher channel throughput. The MUOS waveform will enable MUOS satellites to provide worldwide communication satellite coverage for DoD requirements. MUOS will provide functionality comparable to commercial mobile phone systems. HFDAG is a follow-on HF solution to fulfill the HF communication capability from 2MHz - 30MHz (transmit) and 2MHz - 30MHz (receive) with ALE, Link 11, FSK, USB, LSB and ISB modes of operation for Navy Modernization Process (NMP) and platforms. HFDAG will utilize the existing DMR as the exciter/receiver.

The budget in FY18 provides funding to complete Integrated Waveform (IW) and Mobile User Objective System (MUOS) integration and testing as well as finishing the software development of the DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3 which will determine the most reliable HF frequencies to achieve faster and more dependable linking.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604280N *I JT Tact Radio Sys (JTRS)*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	24.985	2.365	0.513	-	0.513
Current President's Budget	24.300	2.365	4.310	-	4.310
Total Adjustments	-0.685	0.000	3.797	-	3.797
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.685	0.000			
• Program Adjustments	0.000	0.000	3.770	-	3.770
• Rate/Misc Adjustments	0.000	0.000	0.027	-	0.027

Change Summary Explanation

FY18 funding of $3.77M was realigned from OPN 3010 to RDTEN 0604280N in order to complete the testing and delivery of DMR IW and MUOS SATCOM capability, the Navy's technical solution for the IW/MUOS requirement.

In addition, FY18 funding is also necessary to complete the DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3 software development.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604280N / *JT Tact Radio Sys (JTRS)*	Project (Number/Name) 3078 / *Digital Modular Radio*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3078: *Digital Modular Radio*	14.578	24.300	2.365	4.310	-	4.310	0.015	0.017	6.522	6.522	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Digital Modular Radio (DMR) with Integrated Waveform (IW) and Mobile User Objective System (MUOS) capable hardware is the Navy's technical solution for the IW/ MUOS requirement. The DMR AN/USC-61(C), is the first software defined radio to have become a communications system standard for the U.S. Military. See R-2: A. Mission Description and Budget Item Justification for further details.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: DMR	24.300	2.365	4.310	0.000	4.310
Articles:	-	-	-	-	-
Description: Overall program efforts include investigation of emerging technologies through study, development and associated testing for feasibility of program insertion. DMR is the Navy's primary solution for providing the UHF SATCOM Integrated Waveform (IW) and Mobile User Objective System (MUOS) waveform to the Fleet.					
FY 2016 Accomplishments: Merged and continued the development/integration of the Integrated Waveform (IW) and Mobile User Objective System (MUOS) capabilities into the Digital Modular Radio (DMR) including system engineering, software development, testing, design reviews, integration, porting and logistics efforts. Performed IW certification efforts with Joint Integration Test Command (JITC). Began DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3 Software development efforts.					
FY 2017 Plans: Begin High Frequency Distribution Amplifier Group (HFDAG) test & evaluation including Environmental Testing. Continue the development/integration of the Integrated Waveform (IW)/ Mobile User Objective System (MUOS) and DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3 Software development efforts to include system acceptance and regression testing. Complete IW certification efforts with Joint Integration Test Command (JITC) including a dry run and Laboratory developmental testing. Receive pre-release of MUOS software drop from vendor for testing.					
FY 2018 Base Plans: Conduct at-sea development testing and waveform conformance testing of the IW/MUOS waveforms into the DMR system. Conduct a Government Run for Record in support of IW/MUOS and HF ALE software. Complete the development of IW/MUOS software and DMR High Frequency Amplifier Link Establishment (HF ALE) GEN3					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604280N / *JT Tact Radio Sys (JTRS)*	**Project (Number/Name)** 3078 / *Digital Modular Radio*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Software efforts and JITC interoperability certification. Receive final MUOS software drop from vendor for testing and Release Requirements Review (RRR) efforts. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	24.300	2.365	4.310	0.000	4.310

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/3010: *DMR OPN, PE:0303109N*	8.277	17.366	23.695	-	23.695	39.654	53.772	60.540	66.651	Continuing	Continuing

Remarks

D. Acquisition Strategy

General Dynamics C4 Systems (GDC4S) owns the technical data rights to the DMR. Due to this fact they are the only contractor with the unique capabilities and technical know-how to perform the required design work to complete the IW upgrade and the MUOS interoperability efforts. This scope will be issued as the final increment to GDC4S under the sole source contract, N00039-10-C-0069, as authorized by SPAWAR J&A No. 16,976, signed 3 December 2012 by SPAWAR Executive Director and as authorized by SPAWAR J&A No. 16,351 signed 5 January 2010 by the Assistant Secretary of the Navy (ASN), Research Development and Acquisition (RD&A). SPAWAR Systems Center Pacific (SSC PAC) will continue performing HFDAG system test and evaluation.

E. Performance Metrics

MIL-STD conformance to meet JITC Certification for IW/UHF SATCOM waveform and the MUOS waveform.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604282N *I (U)Next Generation Jammer (NGJ) Increment II*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	12.306	52.065	66.686	-	66.686	116.550	171.087	209.686	240.022	1,021.921	1,890.323
3380: *Next Generation Jammer Inc II*	0.000	12.306	52.065	66.686	-	66.686	116.550	171.087	209.686	240.022	1,021.921	1,890.323

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): P520

A. Mission Description and Budget Item Justification

The Next Generation Jammer (NGJ) is the next step in the evolution of Airborne Electronic Attack (AEA) and is needed to meet current and emerging Electronic Warfare gaps, ensure kill chain wholeness against growing threat capabilities and capacity, and to keep pace with threat weapons systems advances and continuous expansion of the AEA mission area. NGJ is an evolutionary acquisition program providing capability in three increments: Increment 1 (Mid-Band) funded under Program Element 0604274N, Increment 2 (Low-Band) and Increment 3 (High-Band). The order of development - mid, low, and then high - was determined by the threat and available capability.

NGJ Increment 2 (NGJ Inc 2) will address the mission need for a robust low band radar and communications jamming capability from an airborne platform that will require capabilities beyond the currently deployed system. Specifically, NGJ Inc 2 will address low-band AEA capability gaps, AEA sufficiency gaps, and address AN/ALQ-99 Tactical Jamming System shortfalls in scalability, flexibility, supportability, interoperability, availability, and capability.

NGJ Inc 2 will deliver significantly improved radar and communications jamming capabilities with Open Systems Architecture that supports software and hardware updates to rapidly counter improving threats. Additionally, NGJ Inc 2 will contribute across the spectrum of missions defined in the Defense Strategic Guidance to include strike warfare, projecting power despite anti-access/area denial challenges, and counterinsurgency/irregular warfare.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	13.000	52.065	76.424	-	76.424
Current President's Budget	12.306	52.065	66.686	-	66.686
Total Adjustments	-0.694	0.000	-9.738	-	-9.738
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.547	0.000			
• SBIR/STTR Transfer	-0.147	0.000			
• Program Adjustments	0.000	0.000	-10.000	-	-10.000

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*		R-1 Program Element (Number/Name) PE 0604282N *I (U)Next Generation Jammer (NGJ) Increment II*			
• Rate/Misc Adjustments	0.000	0.000	0.262	-	0.262

Change Summary Explanation

Technical: Not applicable.

Schedule: Development Request for Proposal Release Decision Point (DRRDP) slid from 3QFY2017 to 2QFY2019. Milestone B (MS B) slid from 3QFY2018 to 1QFY2020. Engineering & Manufacturing Development (EMD) phase start shifted from 3QFY2018 to 2QFY2020. H Build Integration start shifted from 3QFY2018 to 2QFY2020. Next Generation Jammer Increment 2 Test & Evaluation Master Plan slid from 4QFY2017 to 4QFY2018. System Readiness Review-1 (SRR-1) was combined with a System Functional Review-1 (SFR-1) and slid from 4QFY2016 to 1QFY2019. System Readiness Review-2 (SRR-2) slid from 3QFY2018 to 3QFY2020. Integrated Baseline Review (IBR) slid from 4QFY2018 to 4QFY2020. Program Decision Review (PDR) was combined with a System Functional Review-2 (SFR-2) and slid from 1QFY2019 to 4QFY2021. Critical Design Review (CDR) slid from 4QFY2021 to FY2023. The following events were added to the schedule: Technology Demonstrators contract start 1QFY2018, Technology Demonstrators Test and Evaluation start 3QFY2019, and System Supportability Review (SSR) was added in 1QFY2021.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604282N / *(U)Next Generation Jammer (NGJ) Increment II*	Project (Number/Name) 3380 / *Next Generation Jammer Inc II*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3380: *Next Generation Jammer Inc II*	0.000	12.306	52.065	66.686	-	66.686	116.550	171.087	209.686	240.022	1,021.921	1,890.323
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: P520

A. Mission Description and Budget Item Justification

The Next Generation Jammer Increment 2 (NGJ Inc 2) will address the mission need for a robust low band radar and communications jamming capability from an airborne platform that will require capabilities beyond the currently deployed system. Specifically, NGJ Inc 2 will address low-band Airborne Electronic Attack (AEA) capability gaps, AEA sufficiency gaps, and address AN/ALQ-99 Tactical Jamming System shortfalls in scalability, flexibility, supportability, interoperability, availability, and capability.

NGJ Inc 2 will deliver significantly improved radar and communications jamming capabilities with Open Systems Architecture that supports software and hardware updates to rapidly counter improving threats. Additionally, NGJ Inc 2 will contribute across the spectrum of missions defined in the Defense Strategic Guidance to include strike warfare, projecting power despite anti-access/area denial challenges, and counterinsurgency/irregular warfare.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Next Generation Jammer Increment 2 Primary Hardware Development	9.067	12.609	19.500	0.000	19.500
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Performed trade studies in support of technology demonstration efforts, validation of technology readiness levels and development of technology roadmaps.					
FY 2017 Plans: Complete trade studies for Next Generation Jammer Increment 2 (NGJ Inc 2) subsystem concepts such as the transmitter group, power generation and cooling subsystems, and for the functional allocation and integration of these subsystems. These efforts will support the validation of technology readiness levels and development of technology roadmaps leading to the release of the Technology Demonstration Request for Proposal in 2QFY2017. It is anticipated that efforts commenced in FY2016 will ramp up in FY2017 as full staffing is realized, trade studies are completed, and source selection commences in 3QFY2017.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604282N / *(U)Next Generation Jammer (NGJ) Increment II*	**Project (Number/Name)** 3380 / *Next Generation Jammer Inc II*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Award and execution of the three Next Generation Jammer Increment 2 (NGJ Inc 2) technology demonstration contracts to include technology demonstration design reviews and hardware build approvals, leading up to NGJ Inc 2 Engineering & Manufacturing Development (EMD), Development Request for Proposal Decision Release Point (DRRDP) in FY2019. ***FY 2018 OCO Plans:*** N/A					
Title: Next Generation Jammer Increment 2 Systems Engineering	2.972	32.812	35.894	0.000	35.894
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Performed System Engineering efforts in support of Next Generation Jammer Increment 2 (NGJ Inc 2) development to include initial drafts of a performance specification, a System Engineering Plan and a reliability analysis. ***FY 2017 Plans:*** Continue Systems Engineering efforts in support of NGJ Inc 2 development to include final performance specifications, a System Engineering Plan, an acquisition strategy approval, a development of the EMD Statement of Work, a continuous of the reliability analysis, and a source selection in preparation for Technology Demonstration contract award in FY 2018. ***FY 2018 Base Plans:*** Perform Systems Engineering efforts in support of NGJ Inc 2 development to include conducting the Integrated Logistics Assessment and finalizing the performance specification and Statement of Work in preparation for the DRRDP and release of the EMD Request for Proposal in FY 2019. ***FY 2018 OCO Plans:*** N/A					
Title: Next Generation Jammer Increment 2 Support & Management Services	0.267	0.915	0.933	0.000	0.933
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Provided Support and Management Services associated with the Next Generation Jammer Increment 2 (NGJ Inc 2) Program. ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604282N / *(U)Next Generation Jammer (NGJ) Increment II*	**Project (Number/Name)** 3380 / *Next Generation Jammer Inc II*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Provide Support and Management Services associated with the NGJ Inc 2 Program. ***FY 2018 Base Plans:*** Provide Support and Management Services associated with the NGJ Inc 2 Program. ***FY 2018 OCO Plans:*** N/A					
Title: Next Generation Jammer Increment 2 Test & Evaluation ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Test & Evaluation activities include developing the initial Milestone-B (MS-B) Test and Evaluation Master Plan (TEMP) to include the Developmental Evaluation Framework, Integrated Evaluation Framework, and all associated planned resources and required infrastructure/improvements. ***FY 2018 Base Plans:*** Test & Evaluation activities include finalizing the MS-B Test and Evaluation Master Plan (TEMP). Additional efforts include activities to scope initial aeromechanical flight test program and scoping of the initial mission system and integration flight test program. ***FY 2018 OCO Plans:*** N/A	0.000 -	5.729 -	7.274 -	0.000 -	7.274 -
Title: Next Generation Jammer Increment 2 Aircraft Integration ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:***	0.000 -	0.000 -	3.085 -	0.000 -	3.085 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604282N / *(U)Next Generation Jammer (NGJ) Increment II*	**Project (Number/Name)** 3380 / *Next Generation Jammer Inc II*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Utilize information gained from trade studies and technology demonstrations to begin development of the Statement of Requirements (SOR) for the aircraft System Configuration Set (SCS) software build required for integration of Next Generation Jammer Increment 2 physical and software interfaces into the EA-18G. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	12.306	52.065	66.686	0.000	66.686

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Next Generation Jammer Increment 2 is designated a pre-Major Defense Acquisition Program (pre MDAP), MDAP program number P520. The activity will focus on trade studies to inform the acquisition strategy, design engineering trades, and the identification of requirements and available technologies for program entry at Milestone B. Activity will also support execution of three technology demonstration contracts to validate existing technology maturity for low band applications on the EA-18G.

E. Performance Metrics

Utilize studies and technology demonstration efforts for favorable System Readiness Review (SRR) 1 and System Functional Review (SFR) in 1QFY2019 and preparation for the Development Request For Proposal Release Decision Point (DRRDP) 2QFY2019.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604282N / *(U)Next Generation Jammer (NGJ) Increment II*	Project (Number/Name) 3380 / *Next Generation Jammer Inc II*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary H/W Dev - Trade Studies	SS/CPFF	JHU : Laurel, MD	0.000	5.215	Mar 2016	4.790	Dec 2016	0.000		-		0.000	0.000	10.005	10.005
Primary H/W Dev - Trade Studies	WR	NSWC Crane : Crane, IN	0.000	1.659	Feb 2016	3.183	Dec 2016	0.000		-		0.000	0.000	4.842	-
Primary H/W Dev - Trade Studies	WR	NAWCAD : Patuxent River, MD	0.000	1.921	Feb 2016	2.581	Dec 2016	0.000		-		0.000	0.000	4.502	-
Primary H/W Dev - Trade Studies	WR	NAWCWD : Point Mugu, CA	0.000	0.272	Jul 2016	2.055	Dec 2016	0.000		-		0.000	0.000	2.327	-
Primary H/W Dev - Technology Demonstrators 1	C/CPFF	TBD : TBD	0.000	0.000		0.000		6.500	Dec 2017	-		6.500	26.300	32.800	32.800
Primary H/W Dev - Technology Demonstrators 2	C/CPFF	TBD : TBD	0.000	0.000		0.000		6.500	Dec 2017	-		6.500	26.300	32.800	32.800
Primary H/W Dev - Technology Demonstrators 3	C/CPFF	TBD : TBD	0.000	0.000		0.000		6.500	Dec 2017	-		6.500	26.300	32.800	32.800
Primary H/W Dev - EMD	C/CPFF	TBD : TBD	0.000	0.000		0.000		0.000		-		0.000	719.520	719.520	719.520
Aircraft Integration	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		0.000		-		0.000	44.370	44.370	-
Aircraft Integration	Various	Various : Various	0.000	0.000		0.000		3.085	Dec 2017	-		3.085	7.423	10.508	-
Aircraft Integration - EMD	C/CPFF	Boeing : St. Louis, MO	0.000	0.000		0.000		0.000		-		0.000	46.257	46.257	46.257
Software Int - EMD A/C Integration	C/CPFF	Boeing : St. Louis, MO	0.000	0.000		0.000		0.000		-		0.000	140.443	140.443	140.443
Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.000	1.405	Feb 2016	21.847	Dec 2016	24.710	Dec 2017	-		24.710	236.358	284.320	-
Systems Engineering	WR	NAWCWD : Point Mugu, CA	0.000	1.070	Feb 2016	4.838	Dec 2016	4.934	Dec 2017	-		4.934	52.398	63.240	-
Systems Engineering	WR	NSWC Crane : Crane, IN	0.000	0.498	Feb 2016	3.233	Dec 2016	3.298	Dec 2017	-		3.298	35.019	42.048	-
Systems Engineering	SS/CPFF	JHU : Laurel, MD	0.000	0.000		2.088	Dec 2016	2.130	Dec 2017	-		2.130	22.618	26.836	26.836

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604282N / *(U)Next Generation Jammer (NGJ) Increment II*	Project (Number/Name) 3380 / *Next Generation Jammer Inc II*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NRL : Washington, DC	0.000	0.000		0.000		0.000		-		0.000	5.240	5.240	-
Systems Engineering	Various	Various : Various	0.000	0.000		0.806	Dec 2016	0.822	Dec 2017	-		0.822	8.733	10.361	-
		Subtotal	0.000	12.040		45.421		58.479		-		58.479	1,397.279	1,513.219	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Eng & Tech Srvc (Non FFRDC)	Various	Various : Various	0.000	0.265	Mar 2016	0.806	Dec 2016	0.822	Dec 2017	-		0.822	8.733	10.626	10.626
		Subtotal	0.000	0.265		0.806		0.822		-		0.822	8.733	10.626	10.626

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development T&E - TEST DT	WR	NAWCAD : Patuxent River, MD	0.000	0.000		5.729	Dec 2016	7.274	Dec 2017	-		7.274	330.162	343.165	343.165
Development T&E - COTF	SS/FFP	FSC : San Diego, CA	0.000	0.000		0.000		0.000		-		0.000	2.111	2.111	2.111
Operational T&E - TEST OT	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	18.894	18.894	-
		Subtotal	0.000	0.000		5.729		7.274		-		7.274	351.167	364.170	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Various	Various : Various	0.000	0.001	Feb 2016	0.109	Oct 2016	0.111	Oct 2017	-		0.111	2.087	2.308	-
		Subtotal	0.000	0.001		0.109		0.111		-		0.111	2.087	2.308	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604282N / *(U)Next Generation Jammer (NGJ) Increment II*	Project (Number/Name) 3380 / *Next Generation Jammer Inc II*	

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	12.306		52.065		66.686		-		66.686	1,759.266	1,890.323	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604282N / *(U)Next Generation Jammer (NGJ) Increment II*	**Project (Number/Name)** 3380 / *Next Generation Jammer Inc II*

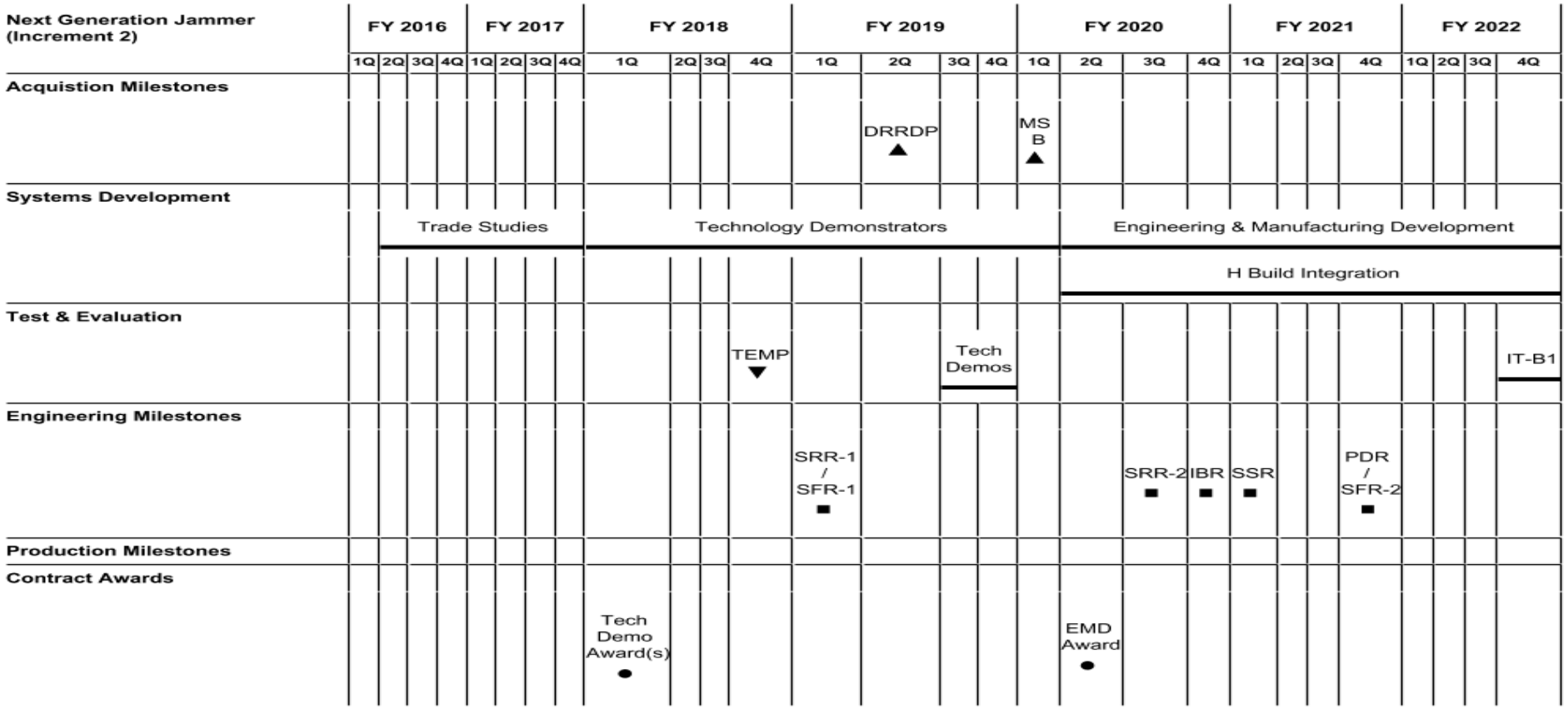

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604282N / *(U)Next Generation Jammer (NGJ) Increment II*	**Project (Number/Name)** 3380 / *Next Generation Jammer Inc II*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Next Generation Jammer (Increment 2)				
Acquistion Milestones: Development Request for Proposal Release Decision Point	2	2019	2	2019
Acquistion Milestones: Milestone B	1	2020	1	2020
Systems Development: Trade Studies	2	2016	4	2017
Systems Development: Technology Demonstrators	1	2018	1	2020
Systems Development: Engineering & Manufacturing Development	2	2020	4	2022
Systems Development: H Build Integration	2	2020	4	2022
Test & Evaluation: NGJ Increment 2 Test & Evaluation Master Plan	4	2018	4	2018
Test & Evaluation: Technology Demonstrations	3	2019	4	2019
Test & Evaluation: IT-B1	4	2022	4	2022
Engineering Milestones: System Readiness Review - 1 / System Functional Review - 1	1	2019	1	2019
Engineering Milestones: System Readiness Review - 2	3	2020	3	2020
Engineering Milestones: System Supportability Review	1	2021	1	2021
Engineering Milestones: Integrated Baseline Review	4	2020	4	2020
Engineering Milestones: Preliminary Design Review / System Functional Review - 2	4	2021	4	2021
Contract Awards: Engineering and Manufacturing Development Contract Award	2	2020	2	2020
Contract Awards: Technology Demonstrators Contract Award(s)	1	2018	1	2018

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604307N *I Surface Combatant Cmbt Sys Eng*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	3,353.215	430.450	282.764	390.238	-	390.238	419.478	300.918	282.092	267.523	Continuing	Continuing
1447: *Surf Combatant Combat System Imp*	3,340.715	415.826	272.306	382.382	-	382.382	412.869	295.788	276.843	262.168	Continuing	Continuing
3357: *Aegis Training Improvement Program*	12.500	14.624	10.458	7.856	-	7.856	6.609	5.130	5.249	5.355	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 180												

A. Mission Description and Budget Item Justification

This project provides Cruiser and Destroyer AEGIS Combat System (ACS) upgrades and integrates new equipment and systems to pace the threat and capture advances in technology. Examples of captured advanced technologies are: open architecture, advanced information assurance and initial cyber defense, fiber optics, distributed computing architecture, and high performance computing, all of which require corresponding AEGIS Weapon System (AWS) and ACS changes.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	386.576	282.764	321.628	-	321.628
Current President's Budget	430.450	282.764	390.238	-	390.238
Total Adjustments	43.874	0.000	68.610	-	68.610
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	55.382	0.000			
• SBIR/STTR Transfer	-11.508	0.000			
• Program Adjustments	0.000	0.000	65.697	-	65.697
• Rate/Misc Adjustments	0.000	0.000	2.913	-	2.913

Change Summary Explanation

FY16 1447/3357:
$11.508M: SBIR Reduction to support Congressional Law
$62.200M: Ship Modernization, Operation and Sustainment Funding (SMOSF) increase to support AEGIS CG Modernization Plan
$6.818M: FMB Reduction

FY17 1447:
Continue AEGIS Far-Term Interoperability Efforts to integrate IFF Mode 5/S
Complete AEGIS BL 5.3 SEARAM Integration and Test Efforts
Continue AEGIS BL 9.A2 (Previously BL 9.A1) Development, Integration and Test Efforts
Continue AEGIS Advanced Capability Build 16 (BL 9.C2) Development, Integration and Test Efforts with limited Government oversight
Continue AEGIS Advanced Capability Build 20 Development, Integration and Test Efforts
Continue AEGIS Task Force Cyber Awakening (TFCA) Development, Integration and Test Efforts
Begin NAVY code updates AEGIS BL 5.3.X in support of Joint USN / Missile Defense Agency Project started in FY16 by MDA.

FY17 3357:
Continue AEGIS ACB16 (BL 9.C2) Training Improvements in support of the additional warfighting scope.

FY18 1447:
Continue AEGIS Far-Term Interoperability Efforts to integrate IFF Mode 5/S
Continue AEGIS BL 9.A2 (Previously BL 9.A1) Development, Integration and Test Efforts
Continue AEGIS Advanced Capability Build 16 (BL 9.C2) Development, Integration and Test Efforts with limited Government oversight
Continue AEGIS Advanced Capability Build 20 Development, Integration and Test Efforts
Continue AEGIS Task Force Cyber Awakening (TFCA) Development, Integration and Test Efforts
Continue AEGIS BL 5.3.X Upgrade Efforts
FY18 increased to support AEGIS BL 5.3.X POR
FY18 increased to support AEGIS IFF MODE 4/5 integration

FY18 1447/3357:
$22.200 million increase for additional effort in BL5.3X implementation.
$20.990 million increase for CG Mod baseline upgrades.
$28.128 million increase for AEGIS 4/5 upgrades.

FY18 3357:
Continue AEGIS ACB16 (BL 9.C2) Training Improvements in support of the additional warfighting scope.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604307N / *Surface Combatant Cmbt Sys Eng*	Project (Number/Name) 1447 / *Surf Combatant Combat System Imp*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1447: *Surf Combatant Combat System Imp*	3,340.715	415.826	272.306	382.382	-	382.382	412.869	295.788	276.843	262.168	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 180

A. Mission Description and Budget Item Justification

This project provides AEGIS Cruiser & Destroyer ACS upgrades and integrates new equipment and systems to pace the threat and capture advances in technology. The ACS capabilities have continually evolved starting with AEGIS Baseline (BL) 2 on Guided Missile Cruisers (CG) 52-58, BL 3 on CG 59-64, and BL 4 on CG 65-73. In FY 1992, AEGIS BL 5 was introduced on Guided Missile Destroyer (DDG) 51-78, BL 6 on DDG 79-90, BL 7 on DDG 91-112, and BL 9 113 and follow.

The AEGIS Modernization Baselines will provide new technology to replace aging military equipment, extend service life, and maintain combat viability of AEGIS combatants into the future. These baselines reduce combat system maintenance life cycle costs and streamline the development of capabilities. AEGIS BL 8 (Cruiser Modernization) upgraded CG 52-58, while AEGIS BL 9, consisting of an upgraded computing infrastructure and computer program enhancements, will modernize CGs 59,60,62 and DDG 51,52,53,57,61,65 and 69. AEGIS BL 9 will provide updated computer program to CG 52-58 to improve warfighter effectiveness by introducing Naval Integrated Fire Control - Counter Air (NIFC-CA), SM-6 and Fleet Urgent Operational Needs (UONs) and reduce the number of AEGIS Baselines within the AEGIS Fleet. AEGIS BL 9 will also be introduced on the new construction destroyers, starting with DDG 113 and follow.

AEGIS Advanced Capability Build (ACB) 16 and the required Technical Insertions (TI) 12/12H/16 Computing and Display Plant will provide warfighter upgrades to AEGIS Cruisers and Destroyers to include improved Ballistic Missile Defense (BMD) capabilities (DDG only), SEWIP BLK II, MH-60R Integration, IFF Mode 5/S, SPQ-9B in the Fire Control Loop, Total Ship Training Capability (TSTC), Condition Based Maintenance, Combat System Boundary Defense, NIFC-CA 2019, and NIFC-CA Collateral #3. ACB16 will support 3 hardware configurations: PHASE 0 AEGIS BL 9.C2.0 TI12 will support 15 DDGs (51/52/57/61/65/69/80/113-120) and 2 AEGIS ASHORE (AA) facilities (Poland/Romania); PHASE 1 AEGIS BL 9.C2.1 / 9.A2.1 TI12H will support 2 DDGs (79/83) and 7 CGs (63-65/66/68/69/71); and PHASE 2 AEGIS BL 9.C2.2 TI16 will support 13 DDGs (81-82/84-89/92/94/121-123) and 3 CGs (70/72/73).

AEGIS Advanced Capability Build (ACB) 20 and Technical Insertion (TI) 16 will provide critical warfighter upgrades to AEGIS FLT III Destroyers. ACB 20 combat system development and integration efforts will support the Air Missile Defense Radar (AMDR) acquisition milestone requirements and build upon ACB 16 to form the foundation for the AEGIS Flight III DDG Combat System. Provide Computer program updates that can be backfit to AEGIS TI 16 hardware configurations.

AEGIS BL 7.2 will provide a common Computer Program build that consolidates 2 (BL 7.1.3 and BL 7.1R) to one software configuration (BL 7.2) for a 22 ship superset (DDG 91-112). Also addresses operations and maintenance deficiencies to improve warfighting readiness and delivers critical warfighting improvements in air defense.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

AEGIS Far Term Interoperability Improvement Plan will address the remaining interoperability issues within fielded AEGIS Combat System configurations to integrate F/A-18 Digital Air Control (Phase 1) in support of F/A-18 and F-35 Joint Strike Fighter initial deployment, integration of the Shipboard Gridlock System/Automatic Correlation (SGS/AC). These updates will be implemented in a phased approach to align with current and future AEGIS development efforts.

AEGIS Task Force Cyber Awakening will assess and provide corrective actions to improve AEGIS Combat System Computer Program and Hardware configurations against emerging threats within the Cyber arena. These improvements will be implemented within AEGIS Combat Systems currently under development and include updates to Boundary Defense Components (BDC).

AEGIS BL 5.3.X combines AEGIS BL 5.3.9 and BMD 4.1 into single AEGIS Computer Program enabling a near simultaneous shift from AAW to BMD to AEGIS Flight I/II DDGs to ensure viability against emerging threats until end of service life (ESL). These improvements will include Computer Program updates to integrate the improved radar performance provided by the hardware upgrades to the SPY-1D radar.

AEGIS BL 5.3 SEARAM Integration and Test program will introduce SEARAM as part of the AEGIS Combat System to address Combatant Commander Requirements to improve warfighter capabilities against advanced anti-ship cruise missiles. These updates will be focused on completing integration and test requirements to validate the performance of the integrated capability. These updates will support Demonstration and Operational Test efforts planned for FY16/17 and introduction into BL 9 DDGs.

AEGIS IFF MODE 4/5 Integration program will address Mode 4 Inoculation, implement Mode 5 IFF within the Fire Control Loop for AEGIS Baselines

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: AEGIS DEVELOPMENT SUPPORT	30.622	33.140	38.270	0.000	38.270
Articles:	-	-	-	-	-
FY 2016 Accomplishments: AEGIS Development Support covers the following areas: AEGIS Technical Design Agent (TDA), AEGIS System Engineering to identify and evaluate emerging threats and support R3B decision process, COTS Obsolescence evaluation, and AEGIS Development Site Operations and Maintenance. AEGIS TDA supported the evaluation of Combat System configuration and provided detailed information on overall performance, identify areas where improvements can be implemented to improve the performance of the Combat System in the Air, Surface and Underwater Combat areas. AEGIS System engineering supported the evaluation of the Combat System threat capabilities and maintain the Capability Phasing Plan to ensure meaningful improvements are implemented within future Combat System					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
upgrades to meet emergent threats. These efforts provided updates to the Capability Phasing Plan (CPP) support future Combat System upgrades to the AEGIS Combat System. AEGIS Development Site Operation and Maintenance provided ~2250 hours of testing in support of planned development, test and integration efforts for the following projects in FY16: AEGIS ACB12 (BL 9.C0/9.C1) AEGIS ACB12 (BL 9.A2), AEGIS BL 7.2A/B, AEGIS ACB16 (9.C2) and AEGIS ACB 20 (BL 9.CX, BL 10.C0) development efforts at Combat System Engineering Development Sites (CSEDS), Program Generation Center (PGC), SPY-1A Test Facility (STF), and Naval System Computing Center (NSCC). ***FY 2017 Plans:*** AEGIS Development Support covers the following areas: AEGIS Technical Design Agent (TDA), AEGIS System Engineering to identify and evaluate emerging threats and support R3B decision process, COTS Obsolescence evaluation, and AEGIS Development Site Operations and Maintenance. The AEGIS TDA will continue to evaluate Combat System configuration and provide detailed information on overall performance, identify areas where improvements can be implemented to improve the performance of the Combat System in the Air, Surface and Underwater Combat areas aligning to the 30 year Combat System plan. AEGIS System engineering will continue to evaluate the Combat System threat capabilities and maintain the Capability Phasing Plan to ensure meaningful improvements are implemented within future Combat System upgrades to meet emergent threats. These efforts are focused on defining the next major upgrade to the AEGIS Combat System ACB20 in support to the 30 year Combat System plan. AEGIS Development Site Operation and Maintenance will support NJ Land Based Test Sites (LBTS) to ensure adequate hours are available to support the planned development efforts. In FY17 ~2400 hours are planned within budget to support AEGIS BL 5.3.X, AEGIS ACB12 (BL 9.A2), AEGIS ACB16 (9.C2) and AEGIS ACB 20 (BL 9.CX, BL 10.C0) development efforts at Combat System Engineering Development Sites (CSEDS), Program Generation Center (PGC), SPY-1A Test Facility (STF), Naval System Computing Center (NSCC), and Surface Combat System Center (SCSC). ***FY 2018 Base Plans:*** Funding increases to support an increased number of test hours required at AEGIS Land Based Test Sites to support 4 development efforts implementing increased functionality to address emergent threats.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
AEGIS Development Support covers the following areas: AEGIS Technical Design Agent (TDA), AEGIS System Engineering to identify and evaluate emerging threats and support R3B decision process, COTS Obsolescence evaluation, and AEGIS Development Site Operations and Maintenance. The AEGIS TDA will continue to evaluate Combat System configuration and provide detailed information on overall performance, identify areas where improvements can be implemented to improve the performance of the Combat System in the Air, Surface and Underwater Combat areas aligning to the 30 year Combat System plan. AEGIS System engineering will continue to evaluate the Combat System threat capabilities and maintain the Capability Phasing Plan to ensure meaningful improvements are implemented within future Combat System upgrades to meet emergent threats. These efforts are focused on defining the next major upgrade to the AEGIS Combat System ACB20 in support to the 30 year Combat System plan. AEGIS Development Site Operation and Maintenance will support NJ Land Based Test Sites (LBTS) to ensure adequate hours are available to support the planned development efforts. In FY18 ~2750 hours are planned within budget to support AEGIS BL 5.3.X, AEGIS ACB12 (BL 9.A2), AEGIS ACB16 (9.C2) and AEGIS ACB 20 (BL 9.CX, BL 10.C0) development efforts at Combat System Engineering Development Sites (CSEDS), Program Generation Center (PGC), SPY-1A Test Facility (STF), Naval System Computing Center (NSCC), and Surface Combat System Center (SCSC). ***FY 2018 OCO Plans:*** N/A					
Title: FAR TERM INTEROPERABILITY IMPROVEMENT PLAN (FTIIP)	1.000	4.727	15.000	0.000	15.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Develop and provide a comprehensive plan to implement corrective action in a phased approach to address IFF Mode 5/S in conjunction with ongoing AEGIS development efforts. Conduct cross-program Interim Progress Reviews (IPRs).					
FY 2017 Plans: Develop and provide a comprehensive plan to implement corrective action in a phased approach to address the integration of F/A-18 Digital Air Control in support of F/A-18 and F-35 Joint Strike Fighter initial deployment,					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and integration of the Shipboard Gridlock System/Automatic Correlation (SGS/AC) in conjunction with ongoing AEGIS development efforts. Conduct cross-program Interim Progress Reviews (IPRs). ***FY 2018 Base Plans:*** Funding increases to support 5 concurrent code development efforts required to implement Digital Air Control (DAC) improvements within AEGIS BL Development efforts to improve Battlegroup Operations of the AEGIS Weapon System. Support System Requirements definition, specification updated, functional allocation within the Combat System components, support code development, unit and system level testing of functionality identified during the FY17 time period. These requirements will be implemented on a number of AEGIS baselines including the following: - BL's under development AEGIS 9.C2, AEGIS ACB20, AEGIS BL 5.3 and fielded configurations AEGIS BL 6.3, AEGIS BL 7.2A/B. Conduct cross-program Interim Progress Reviews (IPRs) #2. ***FY 2018 OCO Plans:*** N/A					
Title: AEGIS BASELINE 7.2A/B ***Articles:*** ***FY 2016 Accomplishments:*** Supported Computer Program installations and provided BL 7.2.1 Computer Program Maintenance update to address open high priority issues identified during deployment workups in order to improve the Combat Systems Operational effectiveness. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	6.800 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: AEGIS BL 5.3 SEARAM INTEGRATION & TEST ***Articles:*** ***FY 2016 Accomplishments:***	13.000 -	3.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Provided engineering support to complete integration and test of SEARAM on Forward Deployed Naval Forces (FDNF) AEGIS DDGs. Completed System Qualification Testing, Combat System Certification Panel (CSCP), Software System Safety Technical Review Panel (SSSTRP), and Weapon System Explosive Safety Review Board (WSESRB) to support the integration, testing and certification of the AEGIS Combat System and Computer Program. Conducted Test Readiness Reviews (TRRs), initial ship installation and Combat System Ship Qualification Test (CSSQT) for DDG 78/64. ***FY 2017 Plans:*** Support initial ship computer program installations and Combat System Ship Qualification Test (CSSQT) planning and execution for DDG 75/71 in the first and second quarter of FY17. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: ADVANCED CAPABILITY BUILD 12 (BL 9.C1) ***Articles:*** ***FY 2016 Accomplishments:*** Completed initial certification of BL 9.C1 in support of modernized DDGs. Supported combat system element changes from PARMs for future ships (DDG 57, 61, 69), including SEWIP Blk II and Consolidated Afloat and Enterprise Service (CANES), and certify these configurations in a follow-on combat system certification effort. Supported test event planning and execution for Agile Prism and Surface Warfare test events in NOV 2015 and SM-6 Follow-on Operational Test & Evaluation (FOT&E) events in JAN 2016. Provided emergent computer program loads to support correction of critical discrepancies within the Combat system. Supported shipboard Sea Trials for DDG 51, 113, 115, 57, 69. Supported CSSQT for DDG 51. Conducted authorization efforts for new construction DDGs to support sea trials. Supported NIFC-CA Collateral Tactical Demonstration (TACDEMO) test event, including computer program and safety authorization efforts and post-event certification efforts. Supported Operational Test events including Cyber security (OCT 2015), Maintenance Demonstration (FEB 2016) and at-sea tracking and live fire events (MAR 2016). ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:***	18.218 -	0.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 OCO Plans:*** N/A					
Title: ADVANCED CAPABILITY BUILD 12 (BL 9.A2) (Previously BL 9.A1)	109.325	12.666	39.251	0.000	39.251
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Funding increases to support the addition of SMOSF efforts in support CG Modernization. Provided system engineering, development, integration and test support to implement AEGIS BL 9.A2. Support Land Based Test Site hardware updates (TI12H / TI16). Conducted Computer Program Development efforts as a unique effort and then merge the code base with the AEGIS Common Source Library. Conducted System Level testing to validate Combat System requirements and supported Combat System Certification process of generating Objective Quality Evidence (OQE). Provided System Engineering, Requirements Definition, Integration and Test. Conducted In-Progress Review (IPR) #2 , Engineering Evaluation, and In-Progress Review (IPR) #3. ***FY 2017 Plans:*** Provide system engineering, development, integration and test support to test and certify AEGIS BL 9.A2. Support Land Based Test Site hardware update at Surface Combat System Center (SCSC). Support Computer Program certification efforts as part of the larger AEGIS Weapon System certification process. Support ship AEGIS Light Off (ALO) and provide Computer Program updates to address issues identified during testing in order to improve the Combat Systems operational effectiveness. ***FY 2018 Base Plans:*** Funding increases to support underway testing planned in support of Combat System certification for 2 AEGIS CG Modernization configurations. Provide system engineering, development, integration and test support to test and certify AEGIS BL 9.A2. Support Computer Program certification efforts for upgraded BL 8 fielded CGs and BL 9 fielded CG's. Support ship installations and provide Computer Program updates to address issues identified during certification					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
assessments in order to improve the Combat Systems operational effectiveness. Support installation of upgraded hardware in CG 52 through 58. ***FY 2018 OCO Plans:*** N/A					
Title: ADVANCED CAPABILITY BUILD 16 / TECHNOLOGY INSERTION 16 (BL 9.C2)	84.102	59.485	68.591	0.000	68.591
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Provided program management, system engineering, development and test, and procurement activities with limited government oversight to support the AEGIS ACB 16 (BL 9.C2) Phase 0, Phase 1 and Phase 2 Capability Package (CP) 1 and 2 program development. In support of AEGIS BL 9.C2 CP 1 Phase 0 on TI12, conducted two Software Increment Reviews (SWIRs). Conduct IPR #1 and executed development and testing of computer program. Merge code with Common Source Library Mainline at Build 22.121.A with BMD 5.1. Completed installation on USS JOHN PAUL JONES (DDG 53) and support authorization efforts for At-Sea test event in Q4. Continued Development, Integration and Test of NIFC-CA and SEWIP Capabilities.					
FY 2017 Plans: Provide program management, system engineering, development and test, and procurement activities with limited government oversight to support the AEGIS ACB 16 (BL 9.C2) Phase 0, Phase 1 and Phase 2 CP 1 and CP 2 program development. Complete development and testing of AEGIS BL 9.C2.0/9.B2.0 Phase 0 CP1 Build 24. Support authorization efforts for At-Sea test events in Q2 and Q4. Conduct two Demos to demonstrate the full breadth of functionality and mitigate risk of test completion prior to certification. Continue development and testing of AEGIS BL 9.C2 Phase 1 and Phase 2 CP 2 on TI12H and TI16 respectively. Merge code with Common Source Library Mainline at Build 24A.					
FY 2018 Base Plans: Funding increases to support 2 concurrent test programs planned in support of AEGIS ACB16 for AEGIS Modernization and New Construction Ships. Provide program management, system engineering, development and test, and procurement activities with limited government oversight to support the AEGIS ACB 16 (BL 9.C2) Phase 0, Phase 1 and Phase 2 CP 1 and CP 2 program development. Complete development and testing of AEGIS BL 9.C2.1/9.B2.1 Phase 0 CP2 Build 27. Support authorization efforts for At-Sea test events in Q2 and Q4. Conduct one Demo to demonstrate the full breadth of functionality and mitigate risk of test completion prior to certification. Continue development and					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
testing of AEGIS BL 9.C2 Phase 2 and TI16 respectively. Merge code with Common Source Library Mainline at Build 27A. ***FY 2018 OCO Plans:*** N/A					
Title: ADVANCED CAPABILITY BUILD 20 / TECHNOLOGY INSERTION 16/20	138.804	115.978	126.475	0.000	126.475
Articles:	-	-	-	-	-
FY 2016 Accomplishments: To Reduce Program Risk, the first 3 DDGs will be integrated within the Technology Insertion (TI) 16 hardware configurations for New Construction and TI 20 will be implemented on later version of the New Construction Program. In support of DDG FLT III with AMDR, provide system engineering to finalize all B-1 system and B-5 sub-system requirement specifications, update the Interface Requirement Specification (IRS) and Interface Design Description (IDD) to execute CS ISE Preliminary Design Review (PDR). Completed CS ISE Computer Program Builds 1-3 and begin developing Computer Program Build 4. Completed CS ISE desktop testing and execute CS ISE Developmental Testing (DT) phase 1. Started executing CS ISE DT phase 2. Supported two Joint Test Program Reviews (JTPRs) to verify status and alignment between all programs participating in SPY-6 Milestone C testing. Provided insight to the approved NCD capabilities and expected performance. Provided system engineering to complete artifacts to execute ACB 20 Phase 0 System Requirements Review (SRR)/System Functional Review (SFR). Supported development of BMD 6 artifacts and execution of BMD 6 SRR. Provide system engineering to the execution of SPY-6 Integration & Testing. Continue to provide management, engineering and test support for the planning and execution of land based testing at Advanced Radar Detection Laboratory (ARDEL) to include CS ISE development, maintenance and operations. Provided systems engineering to support completion of Flight III ship design, including required updates to TI 16 in support of the lead Flight III ships, and conduct TI 16 (Flight III) IPR #1 to review required updates. ***FY 2017 Plans:*** Complete development of Combat System Interface Support Equipment (CS ISE) Builds 4 & 5 and complete CS ISE Developmental Testing (DT) phase 2. Participate in SPY-6 DT-3 test planning and analysis process. Prepare Test Plans and conduct CS ISE Combat System Integration Test (CIT) Test Readiness Reviews (TRRs)					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
for CIT events 1 & 2. Execute CIT-1 at developer site with CS ISE and SPY-6 emulator, and execute CIT-2 at the Advanced Radar Detection Laboratory (ARDEL) at PMRF with CS ISE and SPY-6 EDM. Execute Test Program Review 2 to verify status and alignment between all programs participating in SPY-6 Milestone C testing. Conduct CIT post-event analysis and provide reporting to support the SPY-6 Milestone C decision. Provide system engineering to complete artifacts to execute ACB 20 Phase 0 Delta System Functional Review (SFR). Support development of BMD 6 artifacts and execution of BMD 6 SFR. Update Technical Data Packages (TDPs) for TI 16 in support of Flight III fielding. Complete systems engineering to develop artifacts to support ACB20 design process. Commence systems engineering activities to develop preliminary system design and allocation of functional baseline to system configuration items for the ACB 20/BMD 6 PDR. Complete ACB 20 Modeling and Simulation required for performance analysis in support of the ACB 20 design. Support Mk 160 Guns Control System (GCS) and Cooperative Engagement Capability (CEC) SRRs. ***FY 2018 Base Plans:*** Funding increases to support Code Development required to implement the R3B approved requirements within the ACB20 Combat System Computer Program to support DDG FLT III. Complete systems engineering to develop artifacts for the ACB 20 Preliminary Design Review (PDR). Support development of BMD 6 artifacts and execution of BMD 6 PDR. Commence ACB 20 detailed design and decomposition of performance requirements. Start Computer Program code development to support integration of all scope identified within the Naval Capabilities Document for New Construction and Modernization configuration. Deliver the CS ISE. Establish the ACB 20 Land Base Test Sites. ***FY 2018 OCO Plans:*** N/A					
Title: AEGIS BL 5.3.X UPGRADE	0.000	31.400	50.300	0.000	50.300
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A ***FY 2017 Plans:*** Increase due to initial Navy effort to continue FY16 MDA funded scope. Provide engineering support to AEGIS Baseline (BL) 5.3.X efforts to field a single Combat System, BL5.3.X. BMD BL 4.1 and AEGIS Weapon System (AWS) BL 5.3.11 will be merged into one single computer program, BL 5.3.X, enabling a near simultaneous					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
shift from AAW to BMD. This effort provides system engineering analysis to develop SW upgrades to the AEGIS Weapon System computer program which will enhance warfighting capability. AEGIS B/L 5.3.X is planned for fielding on Flight I/II DDGs allowing these ships to remain relevant through their Expected Service Life (ESL). Update system performance requirements based upon the improved capabilities of the new AWS. Generate development, test and certification schedules in support of fielding plans. Provide engineering support for a joint Missile Defense Agency (MDA)/ United State Navy (USN) System Design Review (SDR) / Preliminary Design Review (PDR) and Critical Design Review (CDR). ***FY 2018 Base Plans:*** This effort increases to support Code Development efforts required to implement Hardware and Software changes within the AEGIS BL 5.3 Computer Program to provide improved Integrated Air & Missile Defense capabilities to address emerging threats. Support development and engineering support of the AEGIS baseline 5.3.X Phase 1 integrated AAW/BMD computer Program as part of Phase 1 implementation. Support Code Development and integration efforts to address emergent requirements related to the following capabilities: stream raid improvements, developed AEGIS Speed To Capability (ASTOC) improvements, and SM-6 capability within single computer program to improve AWS/BMD performance. Provide engineering support and resources to conduct developmental testing (DT) and system functional tests (SFTs) at land based test sites and provide artifacts to support Combat System Certification in FY19. Support development and engineering of AEGIS Baseline 5.3.X Phase 2, integrating Radar hardware improvements to improve performance against emerging threats. Support Surface Combat System Center design, installation, and integration of upgraded SPY hardware to support BL 5.3.X testing efforts planned for FY19-21. Procurement of one (1) AEGIS SPY Array for Surface Combat System Center. ***FY 2018 OCO Plans:*** N/A					
Title: AEGIS: FIX MODE 4 / ACCELERATE 5 ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:***	0.000 -	0.000 -	28.128 -	0.000 -	28.128 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 Base Plans:*** This efforts will start in FY18 and address emergent requirements related to fixing MODE 4 and accelerating the delivery of MODE 5 within Fielded AEGIS Baselines and Development efforts. Start Development of AEGIS Phase I IFF Integration within In-Service Baselines to support Mode 4 Inoculation and implement Mode 5 IFF within the Fire Control Loop and improve Mode 5 Interoperability. Program will be kicked off in 1QFY18 and Phase I IPR #1 will be conducted in 2QFY18 to support the development of Specification Changes (SC) for AEGIS BL 3.6/4.0/6.1/7.2/8.1/9.A0 and will trigger Code Development and Integration Testing for each Baseline to address IFF Mode 4 End of Life (EOL) in 2020 within the fielded AEGIS Combat System configurations. In 4QFY18, Computer Programs will be delivered to support Certification Test of the baselines documented as part of Phase I. Phase I IPR #2 will support certification for the AEGIS Combat Systems and provide direction to start AEGIS Computer Program installation on the Phase I configurations. Phase II IFF Integration within AEGIS Baselines will capture completed code development in Phase I and implement in AEGIS BL 9.A2/9.C2. Phase II IPR #1 will be conducted in 3QFY18. ***FY 2018 OCO Plans:*** N/A					
Title: TASK FORCE CYBER AWAKENING (TFCA)	13.955	11.910	16.367	0.000	16.367
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Initiated development and integration of cybersecurity into all phases of the AEGIS Combat System systems engineering process in order to build capabilities to detect and protect against cyber-attacks and, enable operators to react to prevent damage and restore combat capability within an acceptable timeframe. Developed capability phasing plan that identifies timeline for incremental improvements in cybersecurity. Conducted Combat System Engineering to map interconnections, ports, protocols and interfaces, develop disconnect procedures, and characterize potential attack vectors to inform design decisions. Initiated engineering to assess system of systems impact of migrating to the CYBERSAFE directed criticality-focused enclave architecture. Conducted combat system penetration testing to evaluate vulnerabilities in legacy combat systems and identify gaps to inform cybersecurity priorities, designs, and integration of solutions. Initiated the development of Boundary Defense Capability (Firewall, Intrusion Detection System, External Cross Domain Solution, Bulk Data					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Transfer Services), Centralized Cybersecurity Capabilities (Router/Switch, Internal Cross Domain Solutions, Host Based Intrusion Detection, Anti- Virus Management, Security Information and Event Manager, and Certificate Management), and Element System Capabilities (Networks, Hosts, Applications, Data in Transit, Data at Rest, Removable Media Detection). Conducted cybersecurity trade studies that evaluated solutions against requirements to narrow options for inclusion in the preliminary hardware designs. ***FY 2017 Plans:*** Continue planning and preliminary design efforts using vulnerabilities and threats identified in FY16 to inform analysis of alternatives and final design. Consolidate findings of FY16 testing, solution evaluation, and system engineering to inform ongoing design and development decisions. Continue FY16 engineering effort to identify critical components and enclave changes necessary to migrate combat system to CYBERSAFE architectures. Continue development leading to final design of Boundary Defense Capability (Firewall, Intrusion Detection System, External Cross Domain Solutions, Bulk Data Transfer Services), Centralized Cybersecurity Capabilities (Router/Switch integrity, Internal Cross Domain Solutions, Host Based Intrusion Detection, Anti-Virus Management, Security Information and Event Manager, and Certificate Management), and Element System Capabilities (Networks, Hosts, Applications, Data in Transit, Data at Rest, Removable Media Control). Integrate IA Toolkit into baseline combat system software. Continue cybersecurity trade studies to narrow options and identify solutions for final hardware design. Develop casualty procedures and preventative maintenance to enhance cybersecurity hygiene of existing system and react to cyber incidents. ***FY 2018 Base Plans:*** Funding increase to support coding and integration of completed cybersecurity improvements in parallel with evaluation, development, and integration. AEGIS Cybersecurity Toolkit, file integrity checker, anti-malware, USB Media detection, CSTK, boundary proxy service, System incident and event manager, CASA upgrades, Common user interface, network device integrity and update manager capabilities will be completed, and undergo baseline integration during FY18. Development and engineering of bug fixes, ID Management, certificate management, secure boot, application whitelisting, sandbox, cross domain and daily report capabilities will start and finish during this period as well. Integration and engineering updates necessary to integrate capabilities with each other and the common user interface will also occur as these capabilities are readied for baseline integration. Planning and design efforts for follow on capability increments will continue using vulnerabilities and threats identified in FY17 to inform analysis of alternatives leading to final design. Consolidated findings of FY17 testing and system mapping data will be used to inform ongoing capability increment decisions and priorities. FY17 engineering effort to migrate					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
combat system to CYBERSAFE criticality focused enclave architectures will continue. Finalize cyber security hardware, software, and appliance trade studies and inform future increments. Develop logistics documentation and training material. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	415.826	272.306	382.382	0.000	382.382

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• R&D 0604501N: *Multi Mission Signal Processor*	13.432	2.279	2.424	-	2.424	2.503	2.567	2.856	0.000	Continuing	Continuing
• SCN 2122: *DDG 51*	4,207.664	3,660.251	3,640.792	-	3,640.792	3,819.964	3,731.008	3,392.011	3,448.012	3,834.720	102,786.832
• OPN 0900: *DDG Modernization*	421.195	432.766	603.355	-	603.355	456.218	605.847	582.863	714.483	3,365.248	9,021.982
• R&D 0604378N PU 3159: *NIFC-CA*	23.695	25.750	27.359	-	27.359	29.092	25.767	25.694	0.000	Continuing	Continuing
• OPN 5231: *Ship Missile Support Equipment (AEGIS Support Equipment)*	276.503	320.446	272.359	2.436	274.795	270.120	269.415	313.801	330.194	Continuing	Continuing

Remarks

D. Acquisition Strategy

Combat system improvements are implemented in baselines as described in the project mission statement. After the combat system is completed and tested, the computer program and associated equipment are delivered to the new construction shipbuilders and modernization shipyards where the computer program and equipment are installed and tested along with all other elements of the shipboard combat system and associated combat support systems. The computer program is a Government Furnished Computer Program (GFCP) deliverable to the Production Test Center for equipment test and check out. Future Combat System deliveries will be provided in Advanced Capability Builds (ACBs) and Technology Insertions (TIs) using the Combat System Engineering Agent (CSEA) contract. Additional modifications to the existing contracts will address B/L 9 completion (new construction), ACB 16 additional warfighting improvements, and ACB 20 engineering development efforts related to DDG FLT III, as approved by OPNAV.

E. Performance Metrics

Major Milestones for ACB 12 (BL 9A0):

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Completed BL 9.A0 Combat System Certification Panel second quarter FY16.

Major Milestones for ACB 12 (BL 9.C1):
Completed BL 9.C1 Engineering Evaluation (EE) first quarter FY16.
Completed BL 9.C1 Combat System Certification Panel fourth quarter FY16

Major Milestones for ACB 12 (BL 9.A2):
Completed BL 9.A2 In-Progress Review (IPR) #2 third quarter of FY16.
Completed BL 9.A2 Engineering Evaluation (EE) fourth quarter FY16.
Completed BL 9.A2 In-Progress Review (IPR) #3 fourth quarter of FY16.
BL 9.A2 CG 53 AEGIS Light-Off (ALO) third quarter FY17.
BL 9.A2A Combat System Certification Panel second quarter of FY18.
BL 9.A2B Combat System Certification Panel third quarter of FY18.

Major Milestones for ACB 16 (BL 9.A2/B2/C2):
Completed ACB 16 Software Increment Review (SWIR) #2 first quarter FY16.
Completed ACB 16 Software Increment Review (SWIR) #3 second quarter FY16.
Completed ACB 16 Software Increment Review (SWIR) #4 third quarter FY16.
ACB16 BL 9.C2.0 Demonstration #1 third quarter FY17.
ACB16 BL 9.C2.0 Demonstration #2 fourth quarter FY17.
ACB 16 BL 9.B2.0/9.C2.0 Combat System Certification Panel (CSCP) TI12 Configuration fourth quarter FY18.
ACB16 BL 9.C2.1 Demonstration #3 fourth quarter FY18.
ACB16 BL 9.C2.2 Demonstration #4 fourth quarter FY19.
ACB 16 BL 9.A2.1 / 9.C2.1 Combat System Certification Panel (CSCP) TI12H Configuration first quarter FY20.
ACB 16 BL 9.A2.2 / 9.C2.2 Combat System Certification Panel (CSCP) TI16 Configuration first quarter FY21.

Major Milestones for ACB 20 / TI 20:
Completed Combat System Interface Support Equipment System Functional Review (SFR) first quarter FY16.
Completed Combat System Interface Support Equipment Preliminary Design Review (PDR) fourth quarter FY16.
Completed ACB 20 System Requirements Review (SRR)/System Functional Review (SFR) fourth quarter FY16.
Completed Combat System Interface Support Equipment Critical Design Review (CDR) second quarter FY17.
ACB 20 Delta System Functional Review (SFR) third quarter FY17.
ACB 20 Preliminary Design Review (PDR) first quarter FY18.
Combat System Interface Support Equipment Delivery in fourth quarter FY18
ACB 20 Critical Design Review (CDR) second quarter FY19.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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ACB 20 AEGIS Light-Off (ALO) first quarter FY21.
ACB 20 Demonstration Test (DEMO) second quarter FY21.

Major Milestones for AEGIS Baseline 7.2 (formerly 7.1R Backfit):
Completed BL 7.2.1 Lead Ship Installation second quarter FY16.
Completed BL 7.2.1 Combat System Certification Panel third quarter FY16.

Major Milestones for Far Term Interoperability Improvement Plan (FTIIP):
Completed Kickoff first quarter FY17.
FTIIP In-Progress Review (IPR) #1 third quarter FY17.
FTIIP In-Progress Review (IPR) #2 fourth quarter FY18.
FTIIP In-Progress Review (IPR) #3 fourth quarter FY19.
FTIIP In-Progress Review (IPR) #4 fourth quarter FY20.

Major Milestones for AEGIS BL 5.3. SEARAM Upgrade:
Completed BL 5.3 In-Progress Review (IPR) second quarter FY16.
Completed BL 5.3 Test Readiness Review (TRR) second quarter FY16.

Major Milestones for AEGIS BL 5.3.X Computer Program Integration:
Completed BL 5.3.X Phase 1 In-Progress Review (IPR) second quarter FY17.
BL 5.3.X Phase 1 Critical Design Review (CDR) fourth quarter FY17.
BL 5.3.X Phase 1 Combat System Certification Panel (CSCP) fourth quarter FY19.
BL 5.3.X Phase 2 Combat System Certification Panel (CSCP) fourth quarter FY21.

Major Milestones for Task Force Cyber Awakening (TFCA):
Completed Task Force Cyber Awakening Kick Off in second quarter FY16.
Completed In-Progress Review (IPR) #1 fourth quarter FY16.
Completed In-Progress Review (IPR) #2 second quarter FY17.
In-Progress Review (IPR) #3 fourth quarter FY17.
In-Progress Review (IPR) #4 second quarter FY18.
In-Progress Review (IPR) #5 fourth quarter FY18.
In-Progress Review (IPR) #6 second quarter FY19.
In-Progress Review (IPR) #7 fourth quarter FY19.
In-Progress Review (IPR) #8 second quarter FY20.
In-Progress Review (IPR) #9 fourth quarter FY20.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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In-Progress Review (IPR) #10 second quarter FY21.
In-Progress Review (IPR) #11 fourth quarter FY21.
In-Progress Review (IPR) #12 second quarter FY22.

Major Milestones for AEGIS MODE 4/5 Integration:
Effort Kickoff first quarter FY18.
Phase I In-Progress Review (IPR) #1 second quarter FY18.
Phase I Code Delivery fourth quarter FY18.
Phase I In-Progress Review (IPR) #2 first quarter FY19.
Phase II In-Progress Review (IPR) #1 third quarter FY18.
Phase II In-Progress Review (IPR) #2 fourth quarter FY19.
Phase III In-Progress Review (IPR) #1 first quarter FY19.
Phase III In-Progress Review (IPR) #2 first quarter FY21.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	C/CPIF	Lockheed Martin : Moorestown, NJ	2,172.373	293.428	Oct 2015	185.322	Oct 2016	294.322	Oct 2017	-		294.322	Continuing	Continuing	Continuing
Systems Engineering	SS/CPFF	APL : Baltimore, MD	75.615	16.155	Oct 2015	13.892	Oct 2016	16.080	Oct 2017	-		16.080	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Dahlgren, VA	409.760	35.458	Oct 2015	36.247	Oct 2016	36.890	Oct 2017	-		36.890	Continuing	Continuing	Continuing
Systems Engineering	SS/CPAF	BAE Systems : Rockville, MD	51.902	4.968	Oct 2015	5.263	Oct 2016	5.320	Oct 2017	-		5.320	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Port Hueneme, CA	75.165	6.290	Oct 2015	7.846	Oct 2016	6.074	Oct 2017	-		6.074	Continuing	Continuing	Continuing
Systems Engineering	WR	NWAS : Corona, CA	31.932	2.950	Oct 2015	3.168	Oct 2016	3.854	Oct 2017	-		3.854	Continuing	Continuing	Continuing
Systems Engineering	WR	SPAWAR : San Diego, CA	11.992	0.315	Oct 2015	0.625	Oct 2016	0.824	Oct 2017	-		0.824	Continuing	Continuing	Continuing
Systems Engineering	WR	Various : Various	154.795	15.366	Oct 2015	10.879	Oct 2016	11.958	Oct 2017	-		11.958	Continuing	Continuing	Continuing
Award fees	SS/CPAF	Lockheed Martin : Moorestown, NJ	239.249	32.845	Oct 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Award fees	SS/CPAF	BAE Systems : Rockville, MD	2.603	1.250	Oct 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Award fees	SS/CPAF	Alion Science : Washington DC	2.134	0.786	Oct 2015	0.000		0.000		-		0.000	0.000	2.920	-
Award fees	WR	Various : Various	9.229	0.251	Oct 2015	0.261	Oct 2016	0.350	Oct 2017	-		0.350	Continuing	Continuing	Continuing
		Subtotal	3,236.749	410.062		263.503		375.672		-		375.672	-	-	-

Remarks

Various Performing Activities consist of multiple performing activities with funding for each no greater than $1 million per year. These larger performing activities include CDSA Dam Neck and NSWC/Crane.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	WR	Department of Interior : Boise, Idaho	41.548	0.950	Oct 2015	1.281	Oct 2016	0.980	Oct 2017	-		0.980	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	WR	NAVAIR : Pax River, MD	14.363	0.987	Oct 2015	1.522	Oct 2016	1.350	Oct 2017	-		1.350	Continuing	Continuing	Continuing
Test and Evaluation	Various	PMRF : Hawaii, HI	0.000	0.000		2.500	Oct 2016	0.900	Oct 2017	-		0.900	0.000	3.400	-
		Subtotal	55.911	1.937		5.303		3.230		-		3.230	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	SS/CPAF	Alion Science : Washington DC	29.211	0.962	Oct 2015	1.264	Oct 2016	1.350	Oct 2017	-		1.350	Continuing	Continuing	Continuing
Program Management Support	SS/CPAF	SAIC : Mclean, VA	17.937	1.965	Oct 2015	2.236	Oct 2016	2.130	Oct 2017	-		2.130	Continuing	Continuing	Continuing
DAWDF	Various	Various : Various	0.907	0.900	Oct 2015	0.000	Oct 2016	0.000	Oct 2017	-		0.000	0.000	1.807	-
		Subtotal	48.055	3.827		3.500		3.480		-		3.480	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	3,340.715	415.826		272.306		382.382		-		382.382	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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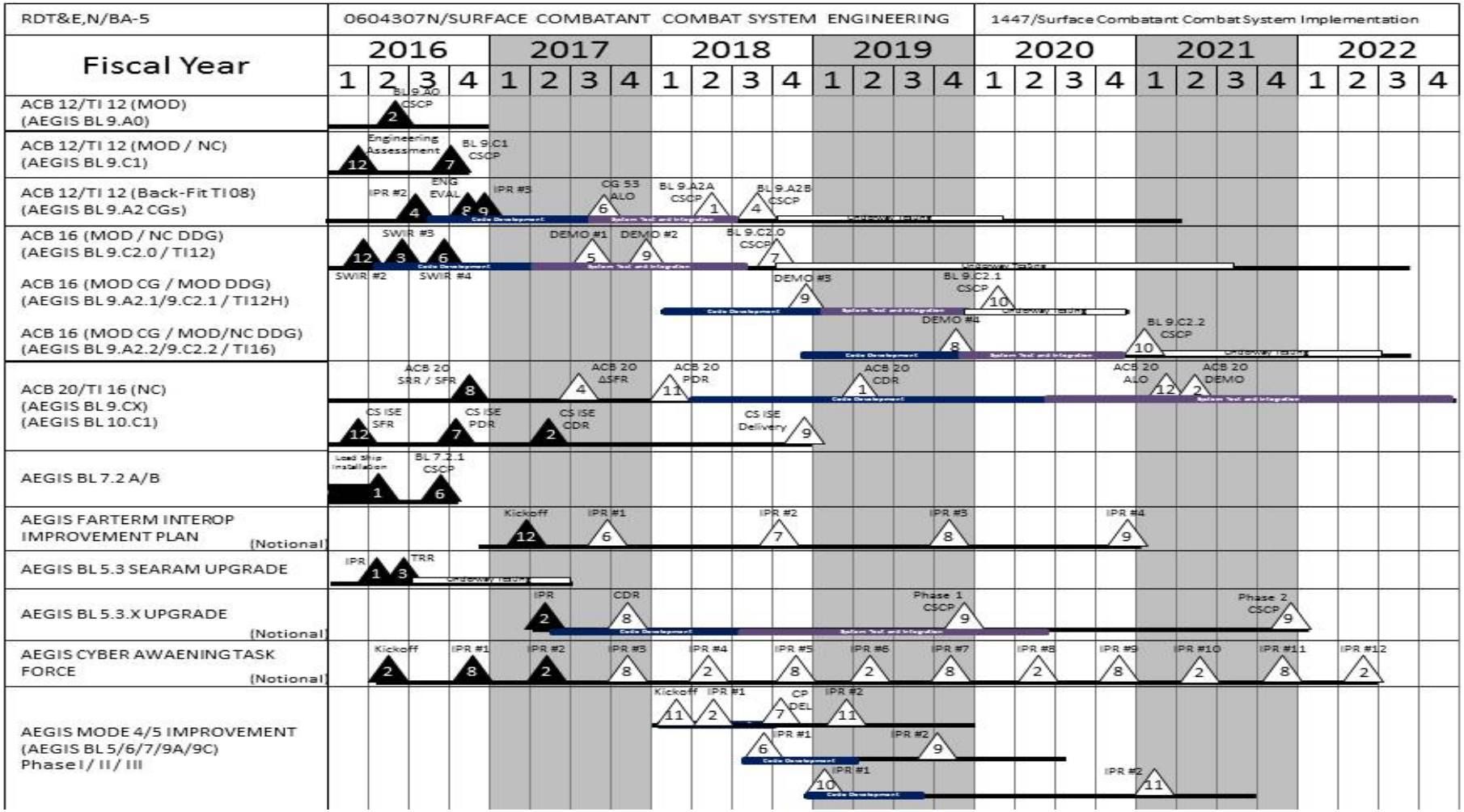

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1447				
ADVANCE CAPABILITY BUILD 12 (BL 9.A0 / 9.C0): ACB 12 (BL 9.A0) COMPUTER PROGRAM CERTIFICATION PANEL	2	2016	2	2016
ADVANCE CAPABILITY BUILD 12 (BL 9.C1): ACB 12 (BL 9.C1) ENGINEERING EVALUATION	1	2016	1	2016
ADVANCE CAPABILITY BUILD 12 (BL 9.C1): ACB 12 (BL 9.C1) COMPUTER PROGRAM CERTIFICATION PANEL	4	2016	4	2016
ADVANCED CAPABILITY BUILD 12 (BL 9.A2): ACB 12 (BL 9.A2) IN-PROGRESS REVIEW #2	3	2016	3	2016
ADVANCED CAPABILITY BUILD 12 (BL 9.A2): ACB 12 (BL 9.A2) ENGINEERING EVALUATION	4	2016	4	2016
ADVANCED CAPABILITY BUILD 12 (BL 9.A2): ACB 12 (BL 9.A2) IN-PROGRESS REVIEW #3	4	2016	4	2016
ADVANCED CAPABILITY BUILD 12 (BL 9.A2): ACB 12 (BL 9.A2) CG 53 AEGIS LIGHT-OFF	3	2017	3	2017
ADVANCED CAPABILITY BUILD 12 (BL 9.A2): ACB 12 (BL 9.A2) COMPUTER PROGRAM CERTIFICATION PANEL 9.A2.A	2	2018	2	2018
ADVANCED CAPABILITY BUILD 12 (BL 9.A2): ACB 12 (BL 9.A2) COMPUTER PROGRAM CERTIFICATION PANEL 9.A2.B	3	2018	3	2018
ADVANCED CAPABILITY BUILD 16 (BL 9.C2): ACB 16 (BL 9.C2) SOFTWARE IMPLEMENTATION REVIEW #2	1	2016	1	2016
ADVANCED CAPABILITY BUILD 16 (BL 9.C2): ACB 16 (BL 9.C2) SOFTWARE IMPLEMENTATION REVIEW #3	2	2016	2	2016
ADVANCED CAPABILITY BUILD 16 (BL 9.C2): ACB 16 (BL 9.C2) SOFTWARE IMPLEMENTATION REVIEW #4	3	2016	3	2016

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ADVANCED CAPABILITY BUILD 16 (BL 9.C2): ACB 16 (BL 9.C2) DEMO #1	3	2017	3	2017
ADVANCED CAPABILITY BUILD 16 (BL 9.C2): ACB 16 (BL 9.C2.0) DEMO #2	4	2017	4	2017
ADVANCED CAPABILITY BUILD 16 (BL 9.C2): ACB 16 (BL 9.C2.0) COMBAT SYSTEM CERTIFICATION PANEL (TI12)	4	2018	4	2018
ADVANCED CAPABILITY BUILD 16 (BL 9.C2): ACB 16 (BL 9.C2.1) DEMO #3	4	2018	4	2018
ADVANCED CAPABILITY BUILD 16 (BL 9.C2): ACB 16 (BL 9.C2.2) DEMO #4	4	2019	4	2019
ADVANCED CAPABILITY BUILD 16 (BL 9.C2): ACB 16 (BL 9.C2.1) COMBAT SYSTEM CERTIFICATION PANEL (TI12H)	1	2020	1	2020
ADVANCED CAPABILITY BUILD 16 (BL 9.C2): ACB 16 (BL 9.C2.2) COMBAT SYSTEM CERTIFICATION PANEL (TI16)	1	2021	1	2021
ADVANCED CAPABILITY BUILD 20: CS ISE SYSTEM FUNCTIONAL REVIEW (SFR)	1	2016	1	2016
ADVANCED CAPABILITY BUILD 20: CS ISE PRELIMINARY DESIGN REVIEW (PDR)	4	2016	4	2016
ADVANCED CAPABILITY BUILD 20: ACB 20 SYSTEM REQUIREMENTS REVIEW (SRR)	4	2016	4	2016
ADVANCED CAPABILITY BUILD 20: ACB 20 SYSTEM FUNCTIONAL REVIEW (SFR)	4	2016	4	2016
ADVANCED CAPABILITY BUILD 20: CS ISE CRITICAL DESIGN REVIEW (CDR)	2	2017	2	2017
ADVANCED CAPABILITY BUILD 20: ACB 20 DELTA SYSTEM FUNCTIONAL REVIEW (SFR)	3	2017	3	2017
ADVANCED CAPABILITY BUILD 20: ACB 20 PRELIMINARY DESIGN REVIEW (PDR)	1	2018	1	2018
ADVANCED CAPABILITY BUILD 20: CS ISE DELIVERY	4	2018	4	2018
ADVANCED CAPABILITY BUILD 20: ACB 20 CRITICAL DESIGN REVIEW (CDR)	2	2019	2	2019
ADVANCED CAPABILITY BUILD 20: ACB 20 AEGIS LIGHT-OFF	1	2021	1	2021
ADVANCED CAPABILITY BUILD 20: ACB 20 DEMONSTRATION	2	2021	2	2021
AEGIS BL 7.2: LEAD SHIP INSTALLATION	1	2016	2	2016
AEGIS BL 7.2: BL 7.2 COMBAT SYSTEM CERTIFICATION PANEL	3	2016	3	2016
FAR TERM INTEROPERABILITY IMPROVEMENTS PLAN: FTIIP KICKOFF	1	2017	1	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
FAR TERM INTEROPERABILITY IMPROVEMENTS PLAN: FTIIP IN-PROGRESS REVIEW #1	3	2017	3	2017
FAR TERM INTEROPERABILITY IMPROVEMENTS PLAN: FTIIP IN-PROGRESS REVIEW #2	4	2018	4	2018
FAR TERM INTEROPERABILITY IMPROVEMENTS PLAN: FTIIP IN-PROGRESS REVIEW #3	4	2019	4	2019
FAR TERM INTEROPERABILITY IMPROVEMENTS PLAN: FTIIP IN-PROGRESS REVIEW #4	4	2020	4	2020
AEGIS BL 5.3.9 SEARAM INT & TEST EFFORT: BL 5.3.9 IN-PROGRESS REVIEW #1	2	2016	2	2016
AEGIS BL 5.3.9 SEARAM INT & TEST EFFORT: BL 5.3.9 TEST READINESS REVIEW	2	2016	2	2016
AEGIS BL 5.3.9 SEARAM INT & TEST EFFORT: BL 5.3.9 UNDERWAY TESTING SUPPORT	3	2016	2	2017
AEGIS BL 5.3.X UPGRADE: AEGIS BL 5.3.X IN-PROGRESS REVIEW (IPR)	2	2017	2	2017
AEGIS BL 5.3.X UPGRADE: AEGIS BL 5.3.X CRITICAL DESIGN REVIEW (CDR)	4	2017	4	2017
AEGIS BL 5.3.X UPGRADE: AEGIS BL 5.3.X COMBAT SYSTEM CERTIFICATION PANEL PHASE 0	4	2019	4	2019
AEGIS BL 5.3.X UPGRADE: AEGIS BL 5.3.X COMBAT SYSTEM CERTIFICATION PANEL PHASE 2	4	2021	4	2021
TASK FORCE CYBER AWAKENING (TFCA): TFCA KICKOFF	2	2016	2	2016
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #1	4	2016	4	2016
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #2	2	2017	2	2017
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #3	4	2017	4	2017
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #4	2	2018	2	2018
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #5	4	2018	4	2018
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #6	2	2019	2	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 1447 / *Surf Combatant Combat System Imp*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #7	4	2019	4	2019
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #8	2	2020	2	2020
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #9	4	2020	4	2020
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #10	2	2021	2	2021
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #11	4	2021	4	2021
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #12	2	2022	2	2022
AEGIS IFF MODE 4/5 Integration: IFF MOD 4/5 Kickoff	1	2018	1	2018
AEGIS IFF MODE 4/5 Integration: PHASE I IN-PROGRESS REVIEW #1	2	2018	2	2018
AEGIS IFF MODE 4/5 Integration: PHASE I COMPUTER PROGRAM DELIVERY	4	2018	4	2018
AEGIS IFF MODE 4/5 Integration: PHASE I IN-PROGRESS REVIEW #2	1	2019	1	2019
AEGIS IFF MODE 4/5 Integration: PHASE II IN-PROGRESS REVIEW #1	3	2018	3	2018
AEGIS IFF MODE 4/5 Integration: PHASE II IN-PROGRESS REVIEW #2	4	2019	4	2019
AEGIS IFF MODE 4/5 Integration: PHASE III IN-PROGRESS REVIEW #1	1	2019	1	2019
AEGIS IFF MODE 4/5 Integration: PHASE III IN-PROGRESS REVIEW #2	1	2021	1	2021

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604307N / *Surface Combatant Cmbt Sys Eng*	Project (Number/Name) 3357 / *Aegis Training Improvement Program*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3357: *Aegis Training Improvement Program*	12.500	14.624	10.458	7.856	-	7.856	6.609	5.130	5.249	5.355	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The AEGIS Training Improvement project provides enhancements and upgrades to the Total Ship Training Capability (TSTC) training components within the combat system to address needs for increased training capability and functionality in conjunction with AEGIS Advanced Capability Builds (ACB). These enhancements will address current and future training requirements by implementing new functionality to enable the individual warfighter through distributed battle group events to engage in more complex training requirements to support fleet required training certification events. Capability Development and integration are related to Integrated Air and Missile Defense, Underwater, Surface, and other warfare areas. Capability enhancements and upgrades include development of re-useable common components that can be leveraged by SSDS MK2 combat systems, and/or integration of re-usable common components developed by the TSTC Battle Force Tactical Trainer (BFTT) Program and Ship Self Defense System (SSDS) MK2 TSTC Training Improvement programs to meet AEGIS combat system training requirements.

TSTC provides realistic joint warfare training across the spectrum of armed conflict, realistic unit level team training in all warfare areas (e.g. NIFC-CA and BMD missions to support IAMD). TSTC provides ships' Commanding Officers and Battle Group/Battle Force Commanders with the ability to conduct coordinated realistic, high stress, combat system level team training as an integral part of the Afloat Training Organization, the Tactical Training Groups and C2F/C3F Fleet Synthetic Trainers (FSTs).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: AEGIS Training Improvement and ACB 16 integration	14.624	10.458	7.856	0.000	7.856
Articles:	-	-	-	-	-
Description: AEGIS Total Ship Training Capability (TSTC) provides enhancements to training components and increase training functionality in conjunction with AEGIS ACB16 development and integration. These enhancements will address current and future training requirements and implement new functionality to support more complex training requirements related to Underwater, Surface and other warfighter upgrades.					
FY 2016 Accomplishments: Complete Build 5.0 testing and Combat System Certification to support SLQ-32 (V)6 SEWIP BLK II integration in AEGIS Baseline 9A.0/9.C1 and legacy AWS Baseline ships. Continued development of TSTC which include BFTT Build 5.1, Advanced Training Domain (ATD) 1.0, Dual Band Radar Simulator, CEC Enhanced and Interim Training Capabilities, and Identification Friend/Foe Simulator. Completed BFTT 5.1 Critical Design Review					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 3357 / *Aegis Training Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and Test Readiness Review milestone events. BFTT 5.1 is planned to be integrated onto CVN-78, and AEGIS BL 9.C2 phases 0 and 1. Completed ATD 1.0 Systems Requirement Review, In-Process Review and System Functional Review milestones. ATD is planned to be integration onto CVN-73 and AEGIS BL 9.C2 phase 2 TI-16 based combat systems. Complete development and integration of the Dual Band Radar simulator that is a key enabler for CVN-78 embedded training. Continued Combat Systems level Integration engineering for Cooperative Engagement Capability (CEC) Enhanced Trainer (CET) training capabilities and commensurate updates to Cooperative Engagement Processor computer program. Began requirements development of AEGIS and SSDS ACB 20 TSTC training requirements, to include updates to naval capabilities documents, combat systems level requirement specifications, and interface requirements of the Air and Missile Defense Radar (AMDR) stimulation capability. Initiated development of NULKA simulation capability to enable combat systems soft kill training.					
FY 2017 Plans: Perform BFTT 5.1 element certification, conduct combat system test and evaluation, and deliver BFTT Build 5.1. Conduct ATD 1.0 preliminary design review and critical design reviews. Complete Build 5.1 testing and Certification for CVN 78 and AEGIS Baselines 9.A0/9.C1/9.C2. Deliver and Install BFTT 5.1 to support CVN78 SSDS MK2 Mod 6C engineering tests at Wallops Island and Shipboard Combat System light off event. Complete ATD 1.0 CDR. Initiate software development for ATD 1.0 and necessary integration engineering to support Aegis Baseline 9.C2 TSTC development. Complete development and deliver CEC Interim Training Capability to enable single and multi-ship integrated fire control training and continue development of embedded CEC training capability. Conduct NULKA and IFF simulation capability preliminary and critical design reviews. Continue development of embedded shipboard MH-60R Simulator and associated components. Initiate development of requirements to support TSTC capability improvements to support tactical training requirements of AEGIS and SSDS ACB 20, to include training system modifications to support integration of the Air and Missile Defense Radar (AMDR) stimulation capability, Enhanced Sea Sparrow Missile System, and Advanced Electronic Warfare.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 3357 / *Aegis Training Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conduct ATD 1.0 Test and Evaluation in support of AEGIS ACB 16 phase 2 and SSDS ACB 12+ TI-16 based combat systems. Deliver CEC Embedded Training capability, IFF Simulator, NULKA Simulator, and MH-60R Simulator for integration and testing. Begin TSTC requirements developments of AMDR, ESSM and Advanced EW training capabilities. Begin TSTC requirements development for the DDG 1000 embedded shipboard training capability. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	14.624	10.458	7.856	0.000	7.856

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE/0204571N/1427: *Surface Tactical Team Trainer (STTT)*	9.857	12.289	15.274	-	15.274	15.387	15.454	13.541	11.153	Continuing	Continuing

Remarks

D. Acquisition Strategy

Efforts will be completed on various contracts to support requirements updates to multiple products that will support Training Integration and Implementation within AEGIS ACB16.

E. Performance Metrics

Training Improvement Program efforts will complete major development milestones.
Major Milestones for ACB 16 (BL 9.A2/B2/C2):
Completed ACB 16 Software Increment Review (SWIR) #2 first quarter FY16.
Completed ACB 16 Software Increment Review (SWIR) #3 second quarter FY16.
Completed ACB 16 Software Increment Review (SWIR) #4 third quarter FY16.
ACB16 BL 9.C2.0 Demonstration #1 third quarter FY17.
ACB16 BL 9.C2.0 Demonstration #2 fourth quarter FY17.
ACB 16 BL 9.B2.0/9.C2.0 Combat System Certification Panel (CSCP) TI12 Configuration fourth quarter FY18.
ACB16 BL 9.C2.1 Demonstration #3 fourth quarter FY18.
ACB16 BL 9.C2.2 Demonstration #4 fourth quarter FY19.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604307N / *Surface Combatant Cmbt Sys Eng*	**Project (Number/Name)** 3357 / *Aegis Training Improvement Program*

ACB 16 BL 9.A2.1 / 9.C2.1 Combat System Certification Panel (CSCP) TI12H Configuration first quarter FY20.
ACB 16 BL 9.A2.2 / 9.C2.2 Combat System Certification Panel (CSCP) TI16 Configuration first quarter FY21.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604311N *I LPD-17 Class Systems Integration*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	32.806	0.730	0.580	0.689	-	0.689	0.968	0.890	0.834	0.850	Continuing	Continuing
2283: *LPD-17 Class System Integration*	32.806	0.730	0.580	0.689	-	0.689	0.968	0.890	0.834	0.850	Continuing	Continuing

A. Mission Description and Budget Item Justification

The LPD 17 Class ships are functional replacements for 41 ships of four classes of amphibious ships. These new ships embark, transport, and land elements of Marine landing forces in an assault by helicopters, landing craft, and amphibious vehicles. Tactics, techniques, and tools for naval expeditionary warfare continue to evolve. The LPD 17 Class configuration must continue to adapt to this evolutionary process, because these ships are expected to be in service until almost 2050. The LPD 17 design includes system configurations that reduce operating and support costs and facilitate operational performance improvements. System engineering and integration efforts that began in FY97 will develop further reductions in life cycle costs and will integrate performance upgrades in a rapid, affordable manner. Possible research and development investigations include improvements in Hull, Mechanical and Electrical systems, advanced sensors, advanced computers, advanced command and control software, advanced information system technologies, and ship based logistics support. Cost reduction and improved performance will be accomplished through sustained modeling and simulation efforts, resolutions of equipment obsolescence issues, prototype development, continued personnel reduction efforts, system performance tradeoff evaluations, and naval expeditionary warfare system engineering. Feedback from the Fleet for integrating system configurations will be accomplished through Naval Surface Warfare Centers (Philadelphia, Dahlgren, Port Hueneme, Panama City). These efforts will result in well defined specifications and drawings in system in system integration design packages that provide technical baseline for follow on ship procurements.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.747	0.580	0.862	-	0.862
Current President's Budget	0.730	0.580	0.689	-	0.689
Total Adjustments	-0.017	0.000	-0.173	-	-0.173
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.017	0.000			
• Program Adjustments	0.000	0.000	-0.180	-	-0.180
• Rate/Misc Adjustments	0.000	0.000	0.007	-	0.007

Change Summary Explanation

FY 2016 funding requests reflects a reduction of $.017 due to execution realignments.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604311N *I LPD-17 Class Systems Integration*

The FY 2018 funding request was reduced by $0.180 million to account for the availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604311N / *LPD-17 Class Systems Integration*	Project (Number/Name) 2283 / *LPD-17 Class System Integration*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2283: *LPD-17 Class System Integration*	32.806	0.730	0.580	0.689	-	0.689	0.968	0.890	0.834	0.850	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The LPD 17 Class ships are functional replacements for 41 ships of four classes of amphibious ships. These new ships embark, transport, and land elements of Marine landing forces in an assault by helicopters, landing craft, and amphibious vehicles. Tactics, techniques, and tools for naval expeditionary warfare continue to evolve. The LPD 17 Class configuration must continue to adapt to this evolutionary process, because these ships are expected to be in service until almost 2050. The LPD 17 design includes system configurations that reduce operating and support costs and facilitate operational performance improvements. System engineering and integration efforts that began in FY97 will develop further reductions in life cycle costs and will integrate performance upgrades in a rapid, affordable manner. Possible research and development investigations include improvements in Hull, Mechanical and Electrical systems, advanced sensors, advanced computers, advanced command and control software, advanced information system technologies, and ship based logistics support. Cost reduction and improved performance will be accomplished through sustained modeling and simulation efforts, resolutions of equipment obsolescence issues, prototype development, continued personnel reduction efforts, system performance tradeoff evaluations, and naval expeditionary warfare system engineering. Feedback from the Fleet for integrating system configurations will be accomplished through Naval Surface Warfare Centers (Philadelphia, Dahlgren, Port Hueneme, Panama City). These efforts will result in well defined specifications and drawings in system in system integration design packages that provide technical baseline for follow on ship procurements.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Systems Engineering/Integration	0.730	0.580	0.689	0.000	0.689
Articles:	-	-	-	-	-
Description: Continued Naval Expeditionary Warfare Systems Engineering efforts and integration efforts for unique LPD 17 Class systems, including efforts to resolve obsolescence issues impacting the class.					
FY 2016 Accomplishments: Developed Fiber Optic Monitoring System prototype. Continued HES-C A/C plant development/procurement for installation in LPDs 26-28. Continued Reliability and Obsolescence studies for shipboard equipment. Tasks included Transparent Armored Window replacement studies, SSDG Lube Oil & Fuel Oil Filter class design improvement studies.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604311N / *LPD-17 Class Systems Integration*	**Project (Number/Name)** 2283 / *LPD-17 Class System Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue development of Fiber Optic Cable Plant Monitoring System under SBIR Phase II and transition to Phase III. Continue HES-C A/C plant development/procurement for installation in LPDs 26-28. Continue SSDG Lube Oil & Fuel Oil Filter class design improvement studies. Initiate shipboard studies for LPD 28 HM&E obsolescence and new commercial systems. Develop design, qualification, and testing projects to evaluate: expanded use of commercial systems for cost savings; and machinery/engineering control system integration with new systems and networks; MPDE Exhaust duct temperature studies and structural analysts for class improvements. Initiate shipboard tests for Additive Manufacturing (3D Printing) of HM&E parts. Continue Reliability and Obsolescence studies. ***FY 2018 Base Plans:*** Continue LPD 28 HM&E obsolescence, reliability, and new system integration studies. Studies to be conducted by HII and system vendors, with review and acceptance through the Naval Surface Warfare Centers. Leverage LXR designs where possible for potential obsolescence backfit solutions on the LPD 17 class. Conduct Environmental Qualification Testing for new systems installed on LPD 28. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.730	0.580	0.689	0.000	0.689

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN/5300: *Completion of Prior Year Shipbuilding Programs*	61.352	45.060	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2,050.608
• SCN/3036: *LPD-17*	550.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	17,500.430

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604311N / *LPD-17 Class Systems Integration*	**Project (Number/Name)** 2283 / *LPD-17 Class System Integration*

D. Acquisition Strategy

FY16 and out: continue developmental sole source efforts

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604329N *I Small Diameter Bomb (SDB)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	221.749	55.818	97.622	112.846	-	112.846	110.575	80.472	66.121	49.456	Continuing	Continuing
1663: *SDB II F-18 Integration*	33.626	19.390	52.616	50.546	-	50.546	34.250	6.002	6.156	3.288	Continuing	Continuing
3072: *Small Diameter Bomb (SDB)*	153.994	28.403	37.605	57.637	-	57.637	72.866	71.020	56.442	42.572	Continuing	Continuing
3082: *JMM BRU*	34.129	8.025	7.401	4.663	-	4.663	3.459	3.450	3.523	3.596	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 439												

A. Mission Description and Budget Item Justification

Small Diameter Bomb Increment II (SDB II) is an ACAT 1D joint Department of the Air Force (USAF) and Department of the Navy (DON), with the USAF as the lead service. SDB II provides the warfighter with the capability to attack mobile targets in all-weather from Stand-Off range. SDB II addresses the following warfighter requirements: attack mobile targets, adverse weather operations, multiple kills per pass, multiple ordnance carriage, precision munitions capability, capability against fixed targets, reduced munitions footprint, increased weapons effectiveness, minimized potential for collateral damage, reduced susceptibility of munitions to countermeasures, and provides a net-centric operations capability. The threshold aircraft for the USAF is the F-15E and for the DON are the F-35B and F-35C. SDB II will be compatible with the Joint Miniature Munitions Bomb Rack Unit (JMM BRU) (BRU-61A/A).

The DON has adjusted the platform integration strategy through the inclusion of F/A-18 E/F to deliver the capability to the warfighter aligned to adjusted F-35 program's schedule.

BUDGET ACTIVITY JUSTIFICATION: This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			**R-1 Program Element (Number/Name)** PE 0604329N *I Small Diameter Bomb (SDB)*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	57.144	97.622	113.006	-	113.006
Current President's Budget	55.818	97.622	112.846	-	112.846
Total Adjustments	-1.326	0.000	-0.160	-	-0.160
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.326	0.000			
• Program Adjustments	0.000	0.000	-0.373	-	-0.373
• Rate/Misc Adjustments	0.000	0.000	0.213	-	0.213

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / *Small Diameter Bomb (SDB)*	Project (Number/Name) 1663 / *SDB II F-18 Integration*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1663: *SDB II F-18 Integration*	33.626	19.390	52.616	50.546	-	50.546	34.250	6.002	6.156	3.288	Continuing	Continuing
Quantity of RDT&E Articles	29	-	68	72	-	72	-	-	-	-		

A. Mission Description and Budget Item Justification

The DON has adjusted the platform integration strategy by inclusion of Small Diameter Bomb II (SDB II) and the Joint Miniature Munitions Bomb Rack Unit (JMM BRU) on F/A-18 E/F to deliver the capability to the warfighter in light of continued F-35 program delays. This program funds the aircraft software and weapon testing required to successfully integrate SDB II/JMM BRU on the F/A-18 E/F to meet a FY 2020 Initial Operational Capability (IOC).

The SDB II integration program began in FY 2014 with funding residing in PE 0204136N, PU 1662 F/A-18 Improvement.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: F/A-18 Integration	19.390	52.616	50.546	0.000	50.546
Articles:	-	68	72	-	72
FY 2016 Accomplishments: Continued Operational Flight Plan (OFP) software coding, to include Universal Armament Interface (UAI). Conducted High Speed Performance wind tunnel at NASA Ames.					
FY 2017 Plans: Continue OFP software coding to include UAI. Complete Cantilever Ground Vibration Test (GVT). Begin Developmental Test (DT) efforts to include Loads, Flying Qualities, Noise and Vibe, Captive Carry, and Weapon Separation testing. Contract with SDB Prime contractor for 10 SDB Jettison Test Vehicles (JTV)s, 24 JTV+s, 2 SDB Electromagnetic Environment Effects (E3)/Hazard of Electromagnetic Radiation to Ordnance (HERO) test assets, and 18 SDB II Weapon System Simulators (WSS) for flight testing. Contract with JMM BRU Prime contractor for 5 Telemetry (TM) BRUs, 4 Tactical BRUs, and 5 BRU System Simulators for flight testing.					
FY 2018 Base Plans: Complete ground testing, continue Development Test (DT) efforts, and complete OFP software coding, including UAI. Contract with SDB Prime contractor for 10 SDB JTVs, 20 SDB JTV+s, 15 SDB Separation Test Vehicles (STVs), 10 SDB Guided Test Vehicles (GTVs), and 2 SDB Captive Carriage Reliability Test (CCRTs) for flight testing. Contract with JMM BRU Prime contractor for 15 BRU JTVs for flight testing.					
FY 2018 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 1663 / *SDB II F-18 Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Accomplishments/Planned Programs Subtotals	19.390	52.616	50.546	0.000	50.546

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Integration of SDB II and the JMM BRU is software driven by ground and flight test requirements.

E. Performance Metrics

Earned value will be used for the contracted efforts.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 1663 / *SDB II F-18 Integration*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
OFP Development and Support	SS/IDIQ	Boeing : St. Louis, MO	12.334	7.000	Jan 2016	15.012	Jan 2017	13.569	Jan 2018	-		13.569	19.309	67.224	67.224
SDB II Prime Contractor Support	SS/IDIQ	Raytheon Missile Systems : Tuscon, AZ	5.000	1.607	May 2016	13.232	May 2017	14.756	May 2018	-		14.756	14.439	49.034	49.034
JMM BRU Prime Contractor Support	SS/IDIQ	Raytheon Intelligence Information Systems, Inc. : Indianapolis, IN	5.554	1.111	May 2016	6.822	May 2017	3.648	May 2018	-		3.648	13.033	30.168	30.168
SDB II/JMM BRU Integration Support	WR	NAWC AD : Patuxent River, MD	2.000	2.200	Nov 2015	2.788	Nov 2016	2.855	Nov 2017	-		2.855	Continuing	Continuing	Continuing
SDB II/JMM BRU Software Support	WR	NAWC WD : China Lake, CA	2.538	2.186	Nov 2015	2.773	Nov 2016	2.844	Nov 2017	-		2.844	Continuing	Continuing	Continuing
		Subtotal	27.426	14.104		40.627		37.672		-		37.672	-	-	-

Remarks

Funding for Boeing includes software coding of Operational Flight Program Build, to include Universal Armament Interface (UAI) and F/A-18 E/F aircraft support required to meet the FY 2020 Initial Operating Capability (IOC).

Funding for SDB II (Raytheon Missile Systems) and JMM BRU (Raytheon Intelligence Information Systems) Prime Contractors includes support of Super Hornet Integration efforts. Increase from FY 2016 to FY 2017 is to procure test articles in support of Development Test (DT) and Operational Test (OT).

Funding for NAWC AD supports engineering support for F/A-18 E/F Super Hornet. Funding for NAWC WD supports engineering support for SDB II and the Advanced Weapons Lab (AWL) at China Lake.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Wind Tunnel Test	MIPR	AEDC : Arnold AFB, TN	6.200	0.000		0.000		0.000		-		0.000	0.000	6.200	-
Wind Tunnel Test	MIPR	NASA Ames : Moffett Field, CA	0.000	0.878	Mar 2016	0.000		0.000		-		0.000	0.000	0.878	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / *Small Diameter Bomb (SDB)*	Project (Number/Name) 1663 / *SDB II F-18 Integration*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test	WR	VX-23 : Patuxent River, MD	0.000	4.408	Jan 2016	11.989	Jan 2017	12.874	Jan 2018	-		12.874	4.889	34.160	-
Operational Test	WR	COMOPTEVFOR : Norfolk, VA	0.000	0.000		0.000		0.000		-		0.000	13.635	13.635	-
		Subtotal	6.200	5.286		11.989		12.874		-		12.874	18.524	54.873	-

Remarks

Wind Tunnel Testing for Arnold Engineering Development Center (AEDC) is for the Separation and Loads Wind Tunnel Testing which occurred 4th Qtr FY 2015. Wind Tunnel Testing for NASA Ames is for the High Speed Performance Wind Tunnel Testing which occurred 2nd Qtr FY 2016.

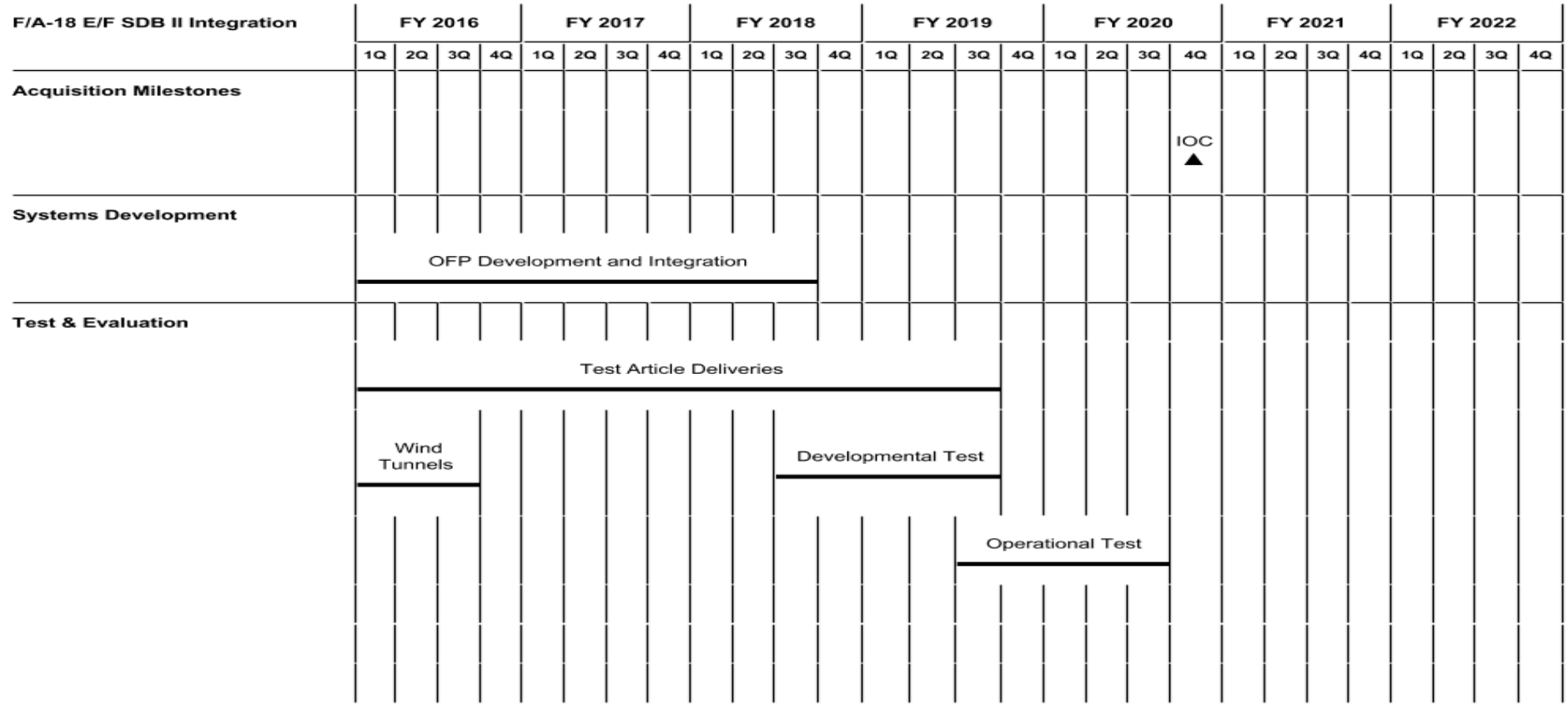
Developmental Test (DT) includes activities such as Loads, Flying Qualities, Noise and Vibe, Captive Carry and Weapon Separation. DT funding in FY 2017 is for test aircraft modifications and flight preparations.

Operational Test funding includes flight tests and support to validate integration of SDB II and F/A-18 E/F.

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	33.626	19.390		52.616		50.546		-		50.546	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 1663 / *SDB II F-18 Integration*



2018PB - 0604329N - 1663

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 1663 / *SDB II F-18 Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
F/A-18 E/F SDB II Integration				
Acquisition Milestones: IOC	4	2020	4	2020
Systems Development: OFP Development and Integration	1	2016	3	2018
Test & Evaluation: Test Article Deliveries	1	2016	3	2019
Test & Evaluation: Wind Tunnels	1	2016	3	2016
Test & Evaluation: Developmental Test	3	2018	3	2019
Test & Evaluation: Operational Test	3	2019	3	2020

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / *Small Diameter Bomb (SDB)*	Project (Number/Name) 3072 / *Small Diameter Bomb (SDB)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3072: *Small Diameter Bomb (SDB)*	153.994	28.403	37.605	57.637	-	57.637	72.866	71.020	56.442	42.572	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 439

A. Mission Description and Budget Item Justification

SDB II is an ACAT ID program providing the warfighter a capability to attack mobile targets in all weather from Stand-Off range. The Air Force is the lead service. Raytheon in Tucson, AZ is the prime contractor. SDB II addresses the following warfighter requirements: attack mobile targets, multiple kills per pass, multiple ordnance carriage, all weather operations, near-precision munitions capability, capability against fixed targets, reduced munitions footprint, increased weapons effectiveness, minimized potential for collateral damage, reduced susceptibility of munitions to countermeasures, and a migration path to net centric ops capability.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: SDB II Weapon Support	11.197	13.863	25.948	0.000	25.948
Articles:	-	-	-	-	-
Description: Funding provides for SDB II Engineering Manufacturing and Development (EMD) efforts including weapon vendor support, test assets, and government support.					
FY 2016 Accomplishments: Continue support of EMD and integration of SDB II with F-35B and F-35C. Continue detailed F-35B and F-35C efforts to include specific weapon software changes to accomodate F-35 Block 4 Operational Flight Program (OFP).					
FY 2017 Plans: Continue support of EMD and integration of SDB II with F-35B and F-35C. Continue detailed F-35B and F-35C efforts to include specific weapon software changes to accommodate F-35 Block 4 OFP and bay modifications.					
FY 2018 Base Plans: Continue support of EMD and integration of SDB II with F-35B and F-35C. Build up and delivery of test assets to support initial flight testing. Begin participation in Flight Sciences and Flight Test support and analysis for Development Test (DT). Testing includes, ejection tests, environmental & loads analysis and release envelope clearance.					
FY 2018 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 3072 / *Small Diameter Bomb (SDB)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: JSF Integration	17.206	23.742	31.689	0.000	31.689
Articles:	-	-	-	-	-
Description: Funding provided for integration of SDB II on F-35B and F-35C, specifically for Lockheed Martin to develop F-35 Operational Flight Program (OFP) software, flight missions, and support and analysis of missions. ***FY 2016 Accomplishments:*** Continue F-35 UAI OFP development and coding. Begin F-35 bay modifications required for SDB II/JSF/JMM BRU integration and modification of test aircraft to support SDB II. Manning of JSF prime contractor team to support SDB II and JMM BRU development and integration. ***FY 2017 Plans:*** Continue F-35 UAI OFP development and coding. Continue F-35 bay modifications required for SDB II/JSF/JMM BRU integration and modification of test aircraft to support SDB II, to include modification of test aircraft and engineering change proposal for future production aircraft. Full manning of JSF prime contractor team to support SDB II weapon development and integration. Begin contract with Lockheed Martin for Block 4 OFP software development. ***FY 2018 Base Plans:*** Increase in the UAI contract to complete the final software testing of UAI into the JSF Operational Flight Program and integration of SIL final validation of software functionality. Increase in Block 4 software to merge UAI software into baseline Block 4 software and modify as necessary. Begin participation in Block 4 Flight Sciences which conducts aircraft environment test, Ground Vibration, and Jettison testing to prove the weapon can safely separate from the aircraft without damaging the aircraft and establishes weapon carriage and release envelopes. Implement Bay Modifications to Development Test (DT) aircraft in support of flight sciences and test. Begin DT. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	28.403	37.605	57.637	0.000	57.637

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 3072 / *Small Diameter Bomb (SDB)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE,AF/0604329F: *Small Diameter Bomb*	29.083	54.838	57.369	-	57.369	78.070	31.462	17.441	27.556	0.000	1,324.132
• MPAF/0207327F: *Small Diameter Bomb*	135.117	92.361	82.705	-	82.705	72.506	143.935	336.512	310.233	883.967	2,092.461
• WPN/BLI2238: *Enter Other Funding Description.*	0.000	0.000	20.968	-	20.968	92.148	121.619	117.743	120.101	301.856	774.435

Remarks

SDB II Lots 1-3 are USAF only procurements. The DON procurements begin with Lot 4 in FY 2018.

D. Acquisition Strategy

The SDB II acquisition strategy was to conduct a full and open competition to select up to two contractors to compete during a planned 42-month risk reduction phase prior to entering EMD. This competition began April 17, 2006 with the signature of contracts to the competing contractors: 1) Raytheon and 2) the team of Boeing and Lockheed Martin. A Fixed Price Incentive Firm Target type contract for EMD, including Firm Fixed Price procurement options for Lots 1-3 was awarded to Raytheon August 9, 2010. Lots 4 & 5 are included in the contract, but are Not-To-Exceed options. Milestone C was approved 4 June 2015, with Lot 1 (Air Force only) awarded 12 June 2015.

The Navy funding will support Navy-unique efforts for SDB Increment II, such as aircraft integration, ship suitability, studies and analysis, and program management and government in-house support. These efforts will be performed on several cost-type contracts or through cost reimbursable work requests to government activities and contractors.

E. Performance Metrics

Earned value management has been implemented on the EMD contract with Raytheon.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 3072 / *Small Diameter Bomb (SDB)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development - SDB II EMD	C/FPIF	Raytheon : Tucson, AZ	31.364	4.121	Mar 2016	7.725	Mar 2017	20.408	Mar 2018	-		20.408	88.648	152.266	152.266
Aircraft Integration - JSF	C/CPFF	Lockheed Martin : Fort Worth, TX	19.859	11.217	Jan 2016	7.005	Jan 2017	4.104	Mar 2018	-		4.104	3.231	45.416	45.416
Prior year Prod Dev cost no longer funded in the FYDP	Various	Various : Various	15.497	0.000		0.000		0.000		-		0.000	0.000	15.497	-
		Subtotal	66.720	15.338		14.730		24.512		-		24.512	91.879	213.179	-

Remarks

Primary Hardware Development to Raytheon in Tucson, AZ reflects the SDB II prime contractor and includes test assets. Primary Hardware Development reflects additional prime contractor costs to support F-35 and JMM BRU integration.

Funding for Lockheed Martin F-35 includes Associate Contractor Agreements (ACA), bay modifications, logistics efforts, and adapter hardware. It does not include OFP, UAI software coding, nor test missions which are represented in Support and Test sections, respectively. Bay modifications with Lockheed Martin will begin in FY 2016 to move hydraulic lines and latches to accomodate the SDB II weapon and JMM BRU rack.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development - JSF	C/CPFF	Lockheed Martin : Ft. Worth, TX	8.534	7.000	Jan 2016	17.316	Jan 2017	24.169	Jan 2018	-		24.169	37.110	94.129	94.129
Prior year Support cost no longer funded in the FYDP	Various	Various : Various	17.410	0.000		0.000		0.000		-		0.000	0.000	17.410	-
		Subtotal	25.944	7.000		17.316		24.169		-		24.169	37.110	111.539	-

Remarks

Studies and Analyses include Navy activities to define Concept of Operations (CONOPS) and better define Navy-specific and interoperability requirements, such as weapon data link advanced concept technology demonstration, seeker trade studies, and data link trade studies. Prior year Software Development efforts are in support of JSuW Joint Capability Technology Demonstrations incorporation of J.11 Message Set into Strike Weapons and Weapon Data Link Network efforts.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 3072 / *Small Diameter Bomb (SDB)*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development for F-35 is the UAI, OFP, and mission planning which supports the SDB II program. Incrementally funded contract was awarded in FY 2014 to initialize, target, and release the weapon. It will cover 95% of the UAI messages and will support all other UAI compliant weapons in JSF Block 4 and prior, e.g., SDB I, JDAM, and LJDAM.															

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation - JSuW/WDLN	Various	Various : Various	2.864	0.000		0.000		0.000		-		0.000	36.715	39.579	-
Operational Test & Evaluation - SDBII	WR	COMOPTEVFOR : China Lake, CA	1.010	0.000		0.000		0.000		-		0.000	23.959	24.969	-
Developmental Test & Evaluation - SDB II	C/CPFF	Lockheed Martin : Ft. Worth, TX	0.000	0.000		0.000		3.416	Mar 2018	-		3.416	23.877	27.293	27.293
Prior Year T&E cost no longer funded in the FYDP	Various	Various : Various	8.049	0.000		0.000		0.000		-		0.000	0.000	8.049	-
		Subtotal	11.923	0.000		0.000		3.416		-		3.416	84.551	99.890	-

Remarks

Developmental Test (DT) and Operational Test (OT) include all aspects of the weapon system - SDB II, JMM BRU, and F-35B and F-35C aircraft OFP. There will be no separate DT or OT period for JMM BRU.

Developmental Test squadrons and locations for F-35B and F-35C are still uncertain as squadrons are being established.

Operational test is scheduled to begin in FY 2021 to support FY 2022 IOC.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Services	Various	Various : Various	2.700	0.520	Nov 2015	0.530	Nov 2016	0.556	Nov 2017	-		0.556	1.732	6.038	-
Government Support	WR	NAWC WD : China Lake,CA	26.380	2.882	Nov 2015	2.598	Nov 2016	2.702	Nov 2017	-		2.702	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 3072 / *Small Diameter Bomb (SDB)*

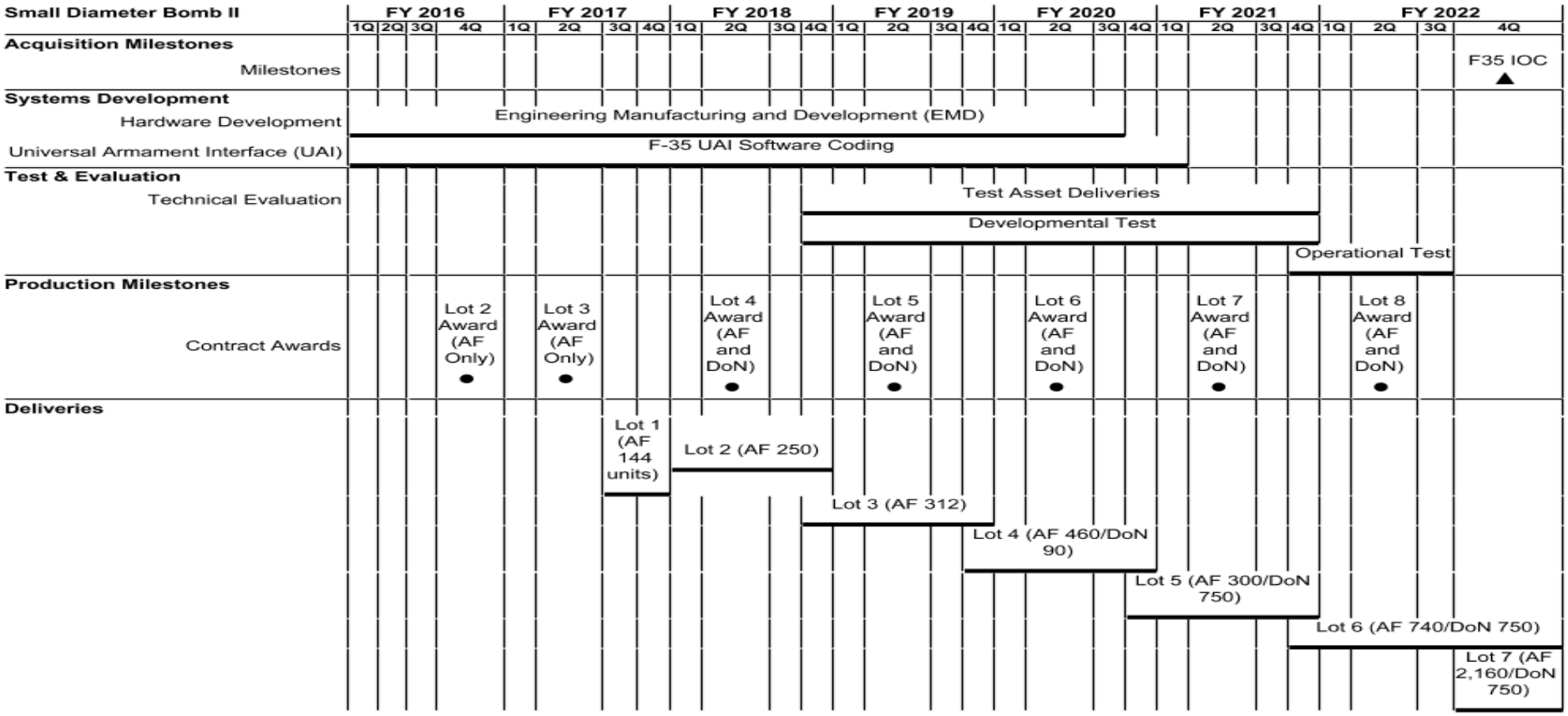
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Support	WR	Various : Various	9.168	0.500	Nov 2015	0.531	Nov 2016	0.600	Nov 2017	-		0.600	Continuing	Continuing	Continuing
Program Management Support	WR	Various : Various	9.128	2.013	Nov 2015	1.750	Nov 2016	1.532	Nov 2017	-		1.532	Continuing	Continuing	Continuing
Travel	MIPR	ASC20OG : Eglin AFB, FL	2.031	0.150	Oct 2015	0.150	Oct 2016	0.150	Oct 2017	-		0.150	0.750	3.231	-
		Subtotal	49.407	6.065		5.559		5.540		-		5.540	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	153.994	28.403		37.605		57.637		-		57.637	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 3072 / *Small Diameter Bomb (SDB)*



2018PB - 0604329N - 3072

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 3072 / *Small Diameter Bomb (SDB)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Small Diameter Bomb II				
Acquisition Milestones: Milestones: F-35 IOC	4	2022	4	2022
Systems Development: Hardware Development: Engineering Manufacturing and Development (EMD)	1	2016	3	2020
Systems Development: Universal Armament Interface (UAI): F-35 OFP Software Coding	1	2016	1	2021
Test & Evaluation: Technical Evaluation: Test Asset Deliveries	4	2018	4	2021
Test & Evaluation: Technical Evaluation: Developmental Test	4	2018	4	2021
Test & Evaluation: Technical Evaluation: Operational Test	4	2021	3	2022
Production Milestones: Contract Awards: Lot 2 Award (AF Only)	4	2016	4	2016
Production Milestones: Contract Awards: Lot 3 Award (AF Only)	2	2017	2	2017
Production Milestones: Contract Awards: Lot 4 Award (AF and DoN)	2	2018	2	2018
Production Milestones: Contract Awards: Lot 5 Award (AF and DoN)	2	2019	2	2019
Production Milestones: Contract Awards: Lot 6 Award (AF and DoN)	2	2020	2	2020
Production Milestones: Contract Awards: Lot 7 Award (AF and DoN)	2	2021	2	2021
Production Milestones: Contract Awards: Lot 8 Award (AF and DoN)	2	2022	2	2022
Deliveries: Lot 1 Delivery (AF only 144 units)	3	2017	4	2017
Deliveries: Lot 2 Del (AF only 250 units)	1	2018	4	2018
Deliveries: Lot 3 Del (AF only 312 units)	4	2018	4	2019
Deliveries: Lot 4 Del (AF 460; DoN 90 units)	4	2019	4	2020
Deliveries: Lot 5 Del (AF 300; DoN 750 units)	4	2020	4	2021
Deliveries: Lot 6 Del (AF 740; DoN 750 units)	4	2021	4	2022
Deliveries: Lot 7 Del (AF 2,160; DoN 750 units)	4	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604329N / *Small Diameter Bomb (SDB)*	Project (Number/Name) 3082 / *JMM BRU*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3082: *JMM BRU*	34.129	8.025	7.401	4.663	-	4.663	3.459	3.450	3.523	3.596	Continuing	Continuing
Quantity of RDT&E Articles		6	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Miniature Munitions Bomb Rack Unit (JMM BRU) is an Air Force (AF) led ACAT III program. It is required for the Department of the Navy's (DON) carriage of the SDB II weapon in the internal bay of the F-35B and F-35C and operation in the DON environment. The SDB II Capability Development Document (CDD) states that SDB II must be operable on the Miniature Munitions Smart Rack BRU-61/A. The BRU-61/A, currently in sustainment for the AF, does not meet the needs to operate with SDB II within the F-35 internal bay in the DON environment. The JMM BRU, designated BRU-61A/A, fills the capability gap required by the DON. Efforts include development of a dual power capability to meet the SDB II operating environment on the F-35.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Joint Miniature Munitions Bomb Rack Unit (JMM BRU) Government Support	3.996	4.605	2.214	0.000	2.214
Articles:	-	-	-	-	-
Description: Funding provided for the SDB II Carriage System support and integration into Navy environments.					
FY 2016 Accomplishments: Continue Engineering and Manufacturing Development (EMD) phase with prime contractor. Continue DON logistics efforts to include design and development of Peculiar Support Equipment (PSE) for JMM BRU. Continue development of Common Aviation Armament Test Set (CAATS) software required for JMM BRU.					
FY 2017 Plans: Continue Engineering Management Development (EMD) phase with prime contractor. EMD Flight Test Phase with prime contractor will be awarded.					
FY 2018 Base Plans: Complete Engineering Management Development (EMD) phase with prime contractor and continue EMD Flight Test Phase with prime contractor.					
FY 2018 OCO Plans: N/A					
Title: Joint Miniature Munitions Bomb Rack (JMM BRU) Prime Contractor	4.029	2.796	2.449	0.000	2.449
Articles:	6	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604329N / *Small Diameter Bomb (SDB)*	**Project (Number/Name)** 3082 / *JMM BRU*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Prime Contractor Support of JMM BRU (BRU-61A/A) TD/EMD contract. ***FY 2016 Accomplishments:*** Continue execution of EMD contract. Purchase 2 Instrumented Measurement Vehicles and 4 Telemetry JMM BRUs. JMM BRU prime contractor fully manned to continue EMD phase. ***FY 2017 Plans:*** Continue Engineering Management Development (EMD) phase; deliver 2 Instrumented Measurement Vehicles and 4 Telemetry JMM BRUs. Award EMD Flight Test phase. ***FY 2018 Base Plans:*** Complete Engineering Management Development (EMD) phase and continue EMD Flight Test phase. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	8.025	7.401	4.663	0.000	4.663

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/072000: *War Consumables*	0.000	0.000	10.345	-	10.345	16.987	17.270	17.617	17.968	Continuing	Continuing

Remarks

Procurement for JMM BRU (BRU-61 A/A) is included in APN BLI 072000 War Consumables. Values above reflect the totals for the BRU-61 A/A cost codes, not the total BLI. First year of procurement is FY 2018 to support the FY 2020 IOC. The first two lots are LRIP lots, which are options on the current development contract with Raytheon Intelligence Information Systems (RIIS). Lot 1 will be 40 units; Lot 2 will be 90 units.

D. Acquisition Strategy

The JMM BRU is an Air Force led ACAT III program. Industry day was held 4QFY 2010, acquisition strategy approved 1QFY 2011 and Material Development Decision (MDD) 2Q FY 2011. Competitive source selection conducted with Technology Development contract award 3QFY 2013. Milestone B was completed and Engineering, Manufacturing, and Development (EMD) contract awarded 4QFY 2015.

E. Performance Metrics

Earned value management is being implemented on the TD/EMD contract.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604366N *I Standard Missile Improvements*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	2,236.597	111.295	120.561	158.578	-	158.578	148.471	87.808	100.765	102.712	Continuing	Continuing
0439: *Standard Missile Improvement*	1,128.811	18.970	24.987	50.188	-	50.188	87.171	82.772	95.529	97.397	Continuing	Continuing
3092: *Standard Missile 6 Program*	1,107.786	92.325	95.574	108.390	-	108.390	61.300	5.036	5.236	5.315	Continuing	Continuing

A. Mission Description and Budget Item Justification

STANDARD Missile (SM) is Navy's premier Anti-Air Warfare (AAW) missile, providing both area defense for the Fleet and self-defense for individual AEGIS CGs and DDGs, as required by the Joint Theater Air Missile Defense (TAMD), Mission Need Statement (MNS), Defense Planning Guidance (DPG), Quadrennial Defense Review (QDR), and Ship Class AAW Self Defense Capstone Requirements Document. SM-6 provides an air defense force multiplier to the U.S. Navy to greatly expand the AWS battlespace. Combining a modified AMRAAM active seeker onto the proven STANDARD Missile airframe, SM-6 provides an extended range anti-air warfare capability both over sea and overland. This low-risk approach relying on non-developmental items supported an FY 2011 Initial Operating Capability. With integrated fire control support, SM-6 provides the Navy with an increased battlespace against Anti-Air Warfare (AAW) threats over-the-horizon.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	115.644	120.561	173.761	-	173.761
Current President's Budget	111.295	120.561	158.578	-	158.578
Total Adjustments	-4.349	0.000	-15.183	-	-15.183
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.482	0.000			
• SBIR/STTR Transfer	-3.867	0.000			
• Program Adjustments	0.000	0.000	-14.712	-	-14.712
• Rate/Misc Adjustments	0.000	0.000	-0.471	-	-0.471

Change Summary Explanation

Decrease in Proj 0439: Standard Missile Improvements reflects minor rephrasing to properly align scope of work and rate adjustments.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604366N / *Standard Missile Improvements*	Project (Number/Name) 0439 / *Standard Missile Improvement*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0439: *Standard Missile Improvement*	1,128.811	18.970	24.987	50.188	-	50.188	87.171	82.772	95.529	97.397	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Modifications to SM-2 BLK IIIA are required for use on DDG-1000 class destroyers. The Joint Universal Waveform Link (JUWL) will be integrated with the Evolved Sea Sparrow Missile (ESSM) and Standard Missile (SM) to communicate with the DDG-1000 SPY-3 radar. SM-2 missile software will be updated with Interrupted Continuous Wave Illumination (ICWI) in order to allow operation with DDG-1000.

STANDARD Missile 2 (SM-2) engineering changes funding is for the design, systems engineering, analysis, integration, and test of replacements for obsolete components as well as performance improvements to address emerging threats. Analysis will include evaluation of transition to an active seeker baseline leveraging the investment made with the SM-6 and ESSM Block II missiles. Initial funding is for the requirements generation, risk reduction/mitigation, and documentation leading to the commencement of the obsolescence project. Capability improvements: Enhanced Stream-Raid performance against numerous threats to include Agile Prism via target resolution in range and Doppler and missile/target pairing logic, over-the-horizon capability for increased depth of fire, enhanced capability against electronic attack, improved firepower due to decreased dependence on illuminators, and enhanced fuzing via guidance integrated fuzing.

Missile Integration with Air and Missile Defense S-Band Radar (AMDR-S) for DDG 51 Flight III ships will include requirements review/updates and analysis, verification; technical documentation, design review and working group SME support, missile/radar integration, missile test hardware procurement, risk assessment, safety, test and evaluation planning, analysis, and data collection. Deliverables include interface control documents (ICDs) changes, missile specifications changes, and engineering documents updates to support AEGIS Configuration Baseline (ACB) 20 PDR (FY18), CDR (FY19); Engineering Development Model (EDM) testing (FY16/17/18); Combat Systems Engineering Development Site (CSEDS) , Moorestown, New Jersey Combat System/missile integration testing (FY18/19/20); Waterfront Integration Testing (WIT) FY 22 and ACB 20 for DDG 51 FLT III Electromagnetic Environmental Effects (E3) and Hazard of Electromagnetic Radiation to Ordnance (HERO) Testing, analysis, and reports. Missile variants: ESSM BLK 1 and 2; SM-2 BLK IIIB MU2; SM-6 BLK I and IA (Current AEGIS configuration).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: DDG-1000 Pre Plan Product Improvement (P3I) Link Integration/ICWI	0.170	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Conducted STANDARD Missile guidance and round level qualification.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 0439 / *Standard Missile Improvement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
FY 2018 Base Plans: N/A					
FY 2018 OCO Plans: N/A					
Title: Air and Missile Defense Radar (AMDR) Integration & Test	18.800	11.694	11.967	0.000	11.967
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Developed and updated missile interface documentation to support the detailed requirements development for ACB Next and integration with AMDR. Provided design, program review, and missile integration technical interchange support with radar and CS government managers and analysts and prime contractors and engineering studies.					
FY 2017 Plans: Provided design, program review, and missile integration technical interchange support with radar and CS government managers and analysts and prime contractors and engineering studies. Provided engineering studies for integration of SM and ESSM with AMDR. Configured missile communication test set for radar risk reduction testing. Planned and prepared for land based testing both at Raytheon Integrated Defense (RIDS), Sudbury, MA Facility and at the Advanced Radar Detection Laboratory (ARDEL)/PMRF, Kauai, HI. Conducted feasibility study to support missile communications functions. Supported the development, monitoring and mitigation of AMDR/ACB 20 missile integration risks as part of the Baseline 10 Risk Register to include: missile integration testing, missile EMI and Engineering topic (ET)-17. Reviewed E3/HERO design, analyses, and qualification tests. Support ACB 20 Delta SFR. Support and conduct early stage radar/Combat System/ Missile integration/risk reduction testing with Missile Communication Test Set (MCTS) at RIDS, Sudbury Facility or ARDEL/PMRF. Conduct planning and configure SM-2 Internal Missile Initializer and Power Supply (IMIPS) Inert Operating Missile (IOM) in preparation for land based testing at Combat System Engineering Development Site (CSEDS) in FY 19.					
FY 2018 Base Plans: Provide Principal for Safety (PFS) and systems safety engineering support. Interface with Weapon System Explosive Safety Review Board (WSESRB) board members and review safety documentation as required. Continue to support and conduct early stage radar/Combat System/Missile integration/risk reduction testing with					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 0439 / *Standard Missile Improvement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Missile Communication Test Set (MCTS)/Missile Simulator Unit (MSU) at the RIDS, Sudbury Facility or ARDEL/ PMRF. Complete E3/HERO design, analysis, and qualification testing. Develop, integrate, and test ET-17 solution to address missile combat system interface and cyber security issues. Conduct planning and configure SM-6 Internal Missile Initializer and Power Supply (IMIPS) Inert Operating Missile (IOM) in preparation for land based testing at Combat System Engineering Development Site (CSEDS) in FY 19. Conduct E3 test using inert operational missile with SPY-6 engineering development model array. Support verification analysis; technical documentation updates, special studies, design review and working group SME support, risk assessment, safety, test and evaluation planning, analysis, and data collection. ***FY 2018 OCO Plans:*** N/A					
Title: Standard Missile-2 Improvement	0.000	13.293	38.221	0.000	38.221
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Complete operational requirements generation and staffing for approval. Complete Missile Performance Specification for 2018 project commencement. Conduct risk reduction/mitigation activities to clearly identify and reduce risk entering into project start in 2018. Complete respective acquisition documentation for the project. Finalize completion contract for the project with the prime contractor. Combat System and System of System kill chain coordination. Insensitive Munitions (IM) effort to enhance the safety and reaction of our weapons including design and development efforts for a single pulse Electronic Ignition Safety Device (EISD), potentially for MK-104 dual thrust rocket motor (DTRM) in an emergent SM-2 improvements effort.					
FY 2018 Base Plans: Prepare for and support a System Readiness Review (SRR)/System functional Review (SFR). Refine Modeling & Simulation tools, develop hardware modification tasks and perform Guidance navigational control (GNC) design tasks, Perform wind tunnel testing to lock in/validate accuracy and precision of models. Identify changes to canister electronic and mechanical interface change documents. Begin the design and validation of new hardware (i.e jet tab assemblies, Dorsal fins, and hybrid control surface assembly) required to meet medium range requirements. Conduct risk reduction/mitigation activities to clearly identify and reduce risk. Continue Insensitive Munitions (IM) effort to enhance the safety and reaction of our weapons including preliminary design					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 0439 / *Standard Missile Improvement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
efforts for a single pulse Electronic Ignition Safety Device (EISD), potentially for MK-104 dual thrust rocket motor (DTRM) in an emergent SM-2 improvements effort. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	18.970	24.987	50.188	0.000	50.188

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Production representative missiles have been built for ESSM between FY12 and FY15 and will be built for SM-2 between FY14 and FY18.

Engineering and integration testing for X-Band Transceiver (XBT) ESSM in FY14-FY17 and SM-2 in FY14-FY16. 67 ESSM missiles and 37 SM missiles are required to support Developmental Test & Operational Test (DT & OT) FY17-FY18 and continue follow-on ship integration and design update effort in FY19.

SM Development, integration, and test is expected to conclude by FY18 for the X-band JUWL and ICWI. ESSM initial engineering design for X-Band JUWL capability was completed and development completed in FY15. XBT JUWL ESSM land-based integration testing is expected to conclude by FY16, and shipboard testing to conclude by early FY19.

Configure one SM-6 Dual Purpose SM-6 Missile Simulation Unit (MSU) in preparation for AMDR/ACB 20 land based testing in FY 18-FY20.

Engineering and integration testing for SM-2 Improvements in FY17-FY22 to support Developmental Test in FY20 and continue follow-on ship integration and design update effort in FY21.

E. Performance Metrics

SM-2 Design verification of component, plate, guidance section, and all up round with a final qualification test in December 2015 - July 2016.

Conduct SM-2 X-band ICWI/JUWL Software System Safety Technical Review Panel (SSSTRP) and Weapon System Explosive Review Board (WSESRB) in FY17.

Conduct SM-2 X-band ICWI/JUWL Software System Safety Technical Review Panel (SSSTRP) and Weapon System Explosive Review Board (WSESRB) in FY19.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 0439 / *Standard Missile Improvement*

Conduct SM-2 X-band ICWI/JUWL Software System Safety Technical Review Panel (SSSTRP) and Weapon System Explosive Review Board (WSESRB) in FY20.

SM-2 BLK III ICWI JUWL Program to complete in July 2016.

Conducting interim WSESRB for XBT JUWL ESSM in FY16. Held preliminary SSSTRP and WSESRB for Dual-Band Transceiver (DBT - supports X-Band JUWL and S-Band) ESSM in FY15, conduct interim SSSTRP and WSESRB for DBT ESSM in FY16, conduct final SSSTRP and WSESRB for DBT ESSM in FY17.

Develop AMDR new missile ICDs for SM-2, SM-6, and ESSM BLK I in FY15/16. Develop new missile ICDs for ESSM BLK II in FY16.

Perform E3/HERO design, analyses, and E3/HERO qualification tests for AMDR in FY17-18.

AMDR WSESRB in FY17.

AMDR MCTS/MSU Uplink/Downlink testing is planned for FY17/18.

AMDR IOM testing is planned for FY19-21.

Combat System Integration for AMDR is planned for FY19-21

Waterfront Integration Testing for AMDR is planned for FY21/22.

SM-2 Improvements PDR in FY19.

SM-2 Improvements SSSTRP in FY19.

SM-2 Improvements WSESRB in FY19.

SM-2 Improvements Developmental Test in FY20.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604366N / *Standard Missile Improvements*	Project (Number/Name) 0439 / *Standard Missile Improvement*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Design and Analysis1	SS/CPAF	RAYTHEON : Tucson, AZ	287.156	6.395	Mar 2016	11.958	Nov 2016	37.040	Nov 2017	-		37.040	Continuing	Continuing	Continuing
Design and Analysis2	C/CPFF	JHU/APL : Laurel, MD	8.116	0.540	Mar 2016	3.250	Nov 2016	3.750	Nov 2017	-		3.750	0.000	15.656	-
Design and Analysis3	MIPR	MIT/Lin Lab : Lexington, MA	0.050	0.000		0.000		0.000		-		0.000	0.000	0.050	-
Design and Analysis4	WR	NSWC : Dahlgren	789.268	0.099	Feb 2016	0.238	Nov 2016	0.400	Nov 2017	-		0.400	0.000	790.005	-
Design and Analysis5	WR	NSWC : Indian Head	0.940	0.000		0.000		0.000		-		0.000	0.000	0.940	-
Design and Analysis6	WR	NAWC : China Lake	4.699	0.080	Feb 2016	0.250	Nov 2016	0.400	Nov 2017	-		0.400	0.000	5.429	-
Design and Analysis7	Various	LOCKHEED MARTIN : Moorestown, NJ	17.775	0.000		0.000		0.000		-		0.000	0.000	17.775	-
Design and Analysis8	WR	CNO : Washington, DC	0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	-
Design and Analysis9	WR	CMDP : Phoenix, AZ	4.795	0.000		0.000		0.000		-		0.000	0.000	4.795	-
Design and Analysis11	WR	NSWC : Crane	0.257	0.000		0.000		0.000		-		0.000	0.000	0.257	-
Design and Analysis12	WR	DOI&CNAP : Washington, DC	0.487	0.000		0.000		0.000		-		0.000	0.000	0.487	-
Design and Analysis13	WR	COMPTEVFOR : Norfolk, VA	0.100	0.000		0.100	Nov 2016	0.000		-		0.000	0.000	0.200	-
Design and Analysis14	C/CPFF	LOCKHEED MARTIN : Moorestown, NJ	2.000	0.000		0.000		0.000		-		0.000	0.000	2.000	-
Design and Analysis15	WR	CARDEROCK : Bethesda, MD	0.050	0.000		0.000		0.000		-		0.000	0.000	0.050	-
Design and Analysis16	WR	NWAS : Corona	0.736	0.000		0.200	Nov 2016	0.500	Nov 2017	-		0.500	0.000	1.436	-
Design and Analysis17	C/CPFF	CORVID : Mooresville, NC	0.100	0.000		0.000		0.000		-		0.000	0.000	0.100	-
Design and Analysis18	C/CPFF	BAE : Rockville, MD	0.172	0.000		0.000		0.000		-		0.000	0.000	0.172	-
Design and Analysis19	MIPR	MDA : Dahlgren,VA	1.257	0.000		0.000		0.000		-		0.000	0.000	1.257	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 0439 / *Standard Missile Improvement*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Design and Analysis20	WR	IWS3D : ARLINGTON, VA	1.500	0.000		0.000		0.000		-		0.000	0.000	1.500	-
Design and Analysis21	WR	VARIOUS : IWS	0.000	11.071	Mar 2016	8.151	Nov 2016	4.226	Nov 2017	-		4.226	0.000	23.448	-
Design and Analysis21	WR	IWS3A : Arlington, Va	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	1,119.468	18.185		24.147		46.316		-		46.316	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DEVELOPMENTAL TEST & EVALUATION1	WR	NSWC : Port Hueneme	0.185	0.000		0.000		0.684	Nov 2017	-		0.684	0.000	0.869	-
DEVELOPMENTAL TEST & EVALUATION2	WR	WSMR : New Mexico	1.600	0.000		0.000		0.000		-		0.000	0.000	1.600	-
DEVELOPMENTAL TEST & EVALUATION3	WR	NAWC : Pt Mugu	0.098	0.000		0.000		0.000		-		0.000	0.000	0.098	-
DEVELOPMENTAL TEST & EVALUATION4	WR	PMRF : Hawaii	0.338	0.000		0.000		0.000		-		0.000	0.000	0.338	-
DEVELOPMENTAL TEST & EVALUATION5	WR	NSWC : PHD/ Techrep	0.567	0.000		0.000		0.200	Nov 2017	-		0.200	0.000	0.767	-
DEVELOPMENTAL TEST & EVALUATION6	SS/CPFF	RAYTHEON : Tucson, Az	0.000	0.000		0.000		0.683	Nov 2017	-		0.683	0.000	0.683	-
DEVELOPMENTAL TEST & EVALUATION7	C/CPFF	JHU/APL : Laurel, Md	0.000	0.000		0.000		0.968	Nov 2017	-		0.968	0.000	0.968	-
DEVELOPMENTAL TEST & EVALUATION8	WR	NSWC : Dahlgren	0.000	0.000		0.000		0.481	Nov 2017	-		0.481	0.000	0.481	-
		Subtotal	2.788	0.000		0.000		3.016		-		3.016	0.000	5.804	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 0439 / *Standard Missile Improvement*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CONTRACTOR ENGINEERING SUPPORT	C/CPAF	VARIOUS : VARIOUS	2.630	0.000		0.000		0.000		-		0.000	0.000	2.630	-
PROGRAM MANAGEMENT SUPPORT	C/CPAF	VARIOUS : VARIOUS	3.669	0.765	Apr 2016	0.780	Nov 2016	0.796	Nov 2017	-		0.796	0.000	6.010	-
TRAVEL	Allot	IWS3 : Arlington, VA	0.256	0.020	Nov 2015	0.060	Nov 2016	0.060	Nov 2017	-		0.060	0.000	0.396	-
		Subtotal	6.555	0.785		0.840		0.856		-		0.856	0.000	9.036	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,128.811	18.970		24.987		50.188		-		50.188	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 0439 / *Standard Missile Improvement*

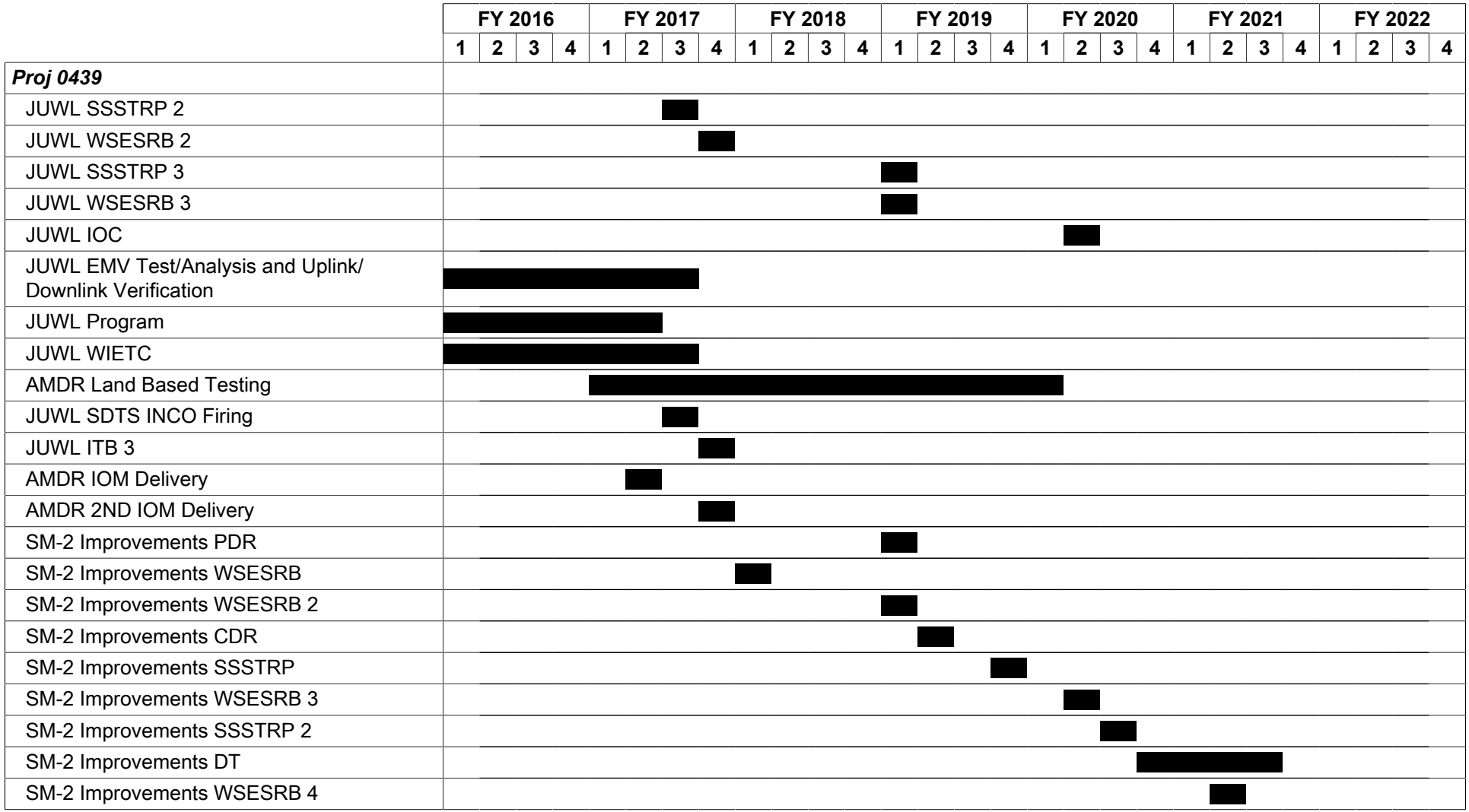


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 0439 / *Standard Missile Improvement*

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AMDR DT/OT																												

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 0439 / *Standard Missile Improvement*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0439				
JUWL SSSTRP 2	3	2017	3	2017
JUWL WSESRB 2	4	2017	4	2017
JUWL SSSTRP 3	1	2019	1	2019
JUWL WSESRB 3	1	2019	1	2019
JUWL IOC	2	2020	2	2020
JUWL EMV Test/Analysis and Uplink/Downlink Verification	1	2016	3	2017
JUWL Program	1	2016	2	2017
JUWL WIETC	1	2016	3	2017
AMDR Land Based Testing	1	2017	1	2020
JUWL SDTS INCO Firing	3	2017	3	2017
JUWL ITB 3	4	2017	4	2017
AMDR IOM Delivery	2	2017	2	2017
AMDR 2ND IOM Delivery	4	2017	4	2017
SM-2 Improvements PDR	1	2019	1	2019
SM-2 Improvements WSESRB	1	2018	1	2018
SM-2 Improvements WSESRB 2	1	2019	1	2019
SM-2 Improvements CDR	2	2019	2	2019
SM-2 Improvements SSSTRP	4	2019	4	2019
SM-2 Improvements WSESRB 3	2	2020	2	2020
SM-2 Improvements SSSTRP 2	3	2020	3	2020
SM-2 Improvements DT	4	2020	3	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 0439 / *Standard Missile Improvement*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SM-2 Improvements WSESRB 4	2	2021	2	2021
AMDR DT/OT	1	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604366N / *Standard Missile Improvements*				Project (Number/Name) 3092 / *Standard Missile 6 Program*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
3092: *Standard Missile 6 Program*	1,107.786	92.325	95.574	108.390	-	108.390	61.300	5.036	5.236	5.315	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program leverages existing missile technology and advanced missile technology. It aligns missile technology roadmaps across the services (NAVSEA, NAVAIR, USAF, USMC and USA) and missile variants within the services, taking advantage of the Navy's investment in the AEGIS Weapons System (AWS), Cooperative Engagement Capability (CEC), and airborne early warning systems. This missile will provide an extended range engagement capability to provide the air superiority and the umbrella of protection for joint U.S. forces and allies against the full spectrum of manned-fixed and rotary-wing aircraft, unmanned aerial vehicles, and land attack and anti-ship cruise missiles in flight, thereby contributing to the continuous protection of forward deployed ground maneuver forces as well as theater rear assets as discussed in the Joint Theater Air Missile Defense (TAMD) Mission Need Statement (MNS), Defense Planning Guide (DPG), Quadrennial Defense Review (QDR), TAMD Capstone Requirements Document, Forward From the Sea, Joint Vision 2010/2020, the 2002/2003 Naval Transformational Roadmap, the Operational Requirements Document for SM-6 BLK 1, and the SM-6 Capability Production Document.

SM-6 portion of Joint and Naval Integrated Fire Control (IFC) is to support the integration, land-based and at-sea test, and analysis in support of the NIFC-CA test and evaluation strategy. NIFC-CA Increment 1 was successfully executed between 2009 and 2015. NIFC-CA Increment 2 commences in FY 16 and will be delivered as a FY19 and FY22 capability. It integrates sensor improvements, SM-6 BLK IA, CEC and AWS ACB 16 into an advanced from the sea (FTS) Kill chain. Efforts include support for the WSMR upgrade, Trackex events, Integration Events and Live Fire test at land based and at-sea tests. FY16 will also execute an IFC FTS Kill Chain Demo with JSF.

Insensitive Munitions (IM) effort supports transition of technology associated with Office of Naval Research (ONR) HARDKILL Future Naval Capabilities reflected in a signed level B, Technology Transition Agreement (TTA), endorse by PEO IWS 3.0, OPNAV N96, ONR, and MDA AX, through FY 16.

Future capabilities demonstration project supports SM demonstrations, captive flight tests, data collection, and analysis tasks.

SM-6 System Engineering and Flight Test Support project supports the completion of SM-6 Follow-On Test and Evaluation (FOT&E) flight tests and Runs for the Record (RFR) required for SM-6 Full Operational Capability (FOC), the completion of Verification of Correction of Deficiencies (VCD) regression flight tests for OT-5/15 deficiencies and associated RFR required for SM-6 FOC, and other SM-6 test events.

SM-6 OT-5/15 Development project supports the system engineering and software development to correct a deficiency discovered during Operational Tests 5 and 15. Correction of this deficiency is required for SM-6 FOC.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 3092 / *Standard Missile 6 Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Insensitive Munitions (IM)	0.958	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: The prime contractor will continue the development effort of the ISD technology concept. Safety plans and reviews with the safety community will be planned and executed. ***FY 2017 Plans:*** Effort combined with SM-2 Improvements starting in FY 17. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: SM-6 System Engineering and Flight Test Support	21.300	24.500	6.200	0.000	6.200
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Completed preparation for and support the remaining four FOT&E events. Began preparation for SM-6 FOT&E Runs for the Record in support of SM-6 Full Operational Capability declaration. Completed preparation for and support the FY16 flight test events. ***FY 2017 Plans:*** Prepare for and support Verification of Correction of Deficiencies (VCD) for OT-5/15 by conducting Regression Flight Tests at the Pacific Missile Range Facility. Requires at least 3 flight tests (each with 1 target) and subsequent collection of data, performance and analysis, and reliability assessments. Following this, complete any required VCD specific Runs for the Record (RFR). Conduct flight test for Software Alignment (SWA) to verify improvements to guidance section software. Requires 1 flight test (to include air launched target and associated aircraft for operations) and subsequent collection of data, performance and analysis, and reliability assessments. Complete SM-6 FOT&E Runs for the Record. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 3092 / *Standard Missile 6 Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Prepare for and support AEGIS Speed to Capability (ASToC) efforts, Combat System Ship Qualifications Trials (CSSQTs), and Fleet firings. Conduct ongoing assessments of capabilities against emerging threats. Collection of data, performance analysis, and reliability assessments. ***FY 2018 OCO Plans:*** N/A					
Title: SM-6 OT-5/15 Development	8.900	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Complete development of the OT-5/15 correction ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Naval Integrated Fire Control - Counter Air (NIFC-CA)	2.016	2.215	6.191	0.000	6.191
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue NIFC-CA Increment 1 live fire tests and updates to capabilities and limitations. Commence NIFC-CA Increment 2 2019/2022 capability. Support the WSMR Desert Ship Upgrade III in support of NIFC-CA Increment 2. Integrate the SM-6 Block IA missile simulation into the NIFC-CA Federation. Support development of NIFC-CA Increment 2 test strategy, Performance Assessment, Data Analysis, and Systems Engineering Working Groups. Conduct Live fire test 4 an 5. ***FY 2017 Plans:*** Support Increment 2 SoS integration and test activities associated with the WSMR Desert Ship Upgrade. Integrate SM-6 6DoF updates into the NIFC-CA Federation Support Quarterly Program Reviews, Performance Assessment Working Groups, Modeling and Simulation Working Group, and System Engineering Integration and Test Working Group.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 3092 / *Standard Missile 6 Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Provide MSU and support to engineering test events and post event performance analysis. ***FY 2018 Base Plans:*** Continue supporting Increment 2 SoS integration and test activities associated with the WSMR Desert Ship Upgrade. Continue integrating SM-6 6DoF updates into the NIFC-CA Federation Support Quarterly Program Reviews, Performance Assessment Working Groups, Modeling and Simulation Working Group, and System Engineering Integration and Test Working Group. Provide MSU and support to engineering test events and post event performance analysis. ***FY 2018 OCO Plans:*** N/A					
Title: Future Capability Demonstration	59.151	68.859	95.999	0.000	95.999
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Complete preparation for and support the TACDEMO. Begin development of additional capabilities in SM-6 Blk IA. Additional details are held at a higher classification. ***FY 2017 Plans:*** Continue development of additional capabilities in SM-6 Blk IA missile. Prepare for two additional CTV flight tests and one GTV test flight at the Pacific Missile Range Facility in 3QFY18. Conduct captive flight tests (CFTs) for collection of data, performance analysis, and reliability assessments. Additional details are held at a higher classification. ***FY 2018 Base Plans:*** Continue development of additional capabilities in SM-6 Blk IA missile. Complete preparation for and support Future Capability Demonstration At-Sea Test 3 (two CTVs and one GTV) at the Pacific Missile Range Facility in 3QFY18. Prepare for Future Capability Demonstration Land-Based Test 1 at White Sands Missile Range in 2QFY19. Conduct captive flight tests (CFTs). Collection of data, performance analysis, and reliability assessments. Additional details are held at a higher classification. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	92.325	95.574	108.390	0.000	108.390

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 3092 / *Standard Missile 6 Program*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• WPN 2234: *Standard Missile*	417.252	543.712	510.875	35.208	546.083	521.100	534.357	543.658	554.604	3,898.752	9,400.597
• Standard Missile: *QTY*	101.000	125.000	117.000	8.000	125.000	100.000	100.000	100.000	100.000	594.000	1,800.000

Remarks

D. Acquisition Strategy

SM-6 Acquisition Strategy signed by OSD AT&L 14 March 2012.

E. Performance Metrics

Accomplishments
- Future Capability Demonstration Captive Flight Test 2nd quarter 2015 - 1st quarter 2016
- Future Capability Demonstration Captive Test Vehicle events Feb 2015
- DT (FOT&E) 2015
- NIFC-CA Live Fire Test (5) Jul 2016
- Future Capability Demonstration At-Sea Test (2) Jan 2016
- NIFC-CA At-Sea Test (3) Sep 2016
- NIFC-CA Live Fire Test (4) (Joint Strike Fighter Demo) Sep 2016
- OT (FOT&E) Jan 2016

Upcoming Milestones
- Integrated Fire Control (IFC) Increments I (Oct 2008-Sep 2015) and II (Oct 2015-Sep 2022)
- Future Capability Demonstration At-Sea Test (3) 3Q 2018
- Future Capability Demonstration Land-Based Test (4) 2Q 2019
- Future Capability Demonstration At-Sea Test (4) 4Q 2019
- Future Capability Demonstration Captive Flight Test (CFT) (3) Mar 2017
- Future Capability Demonstration Captive Flight Test (CFT) (4) 1Q-2Q 2018
- Future Capability Demonstration Captive Flight Test (CFT) (5) 4Q 2018 - 1Q 2019
- Operational Test (OT- 5/15) Apr 2017
- NIFC-CA At-Sea Test (4) Mar 2017
- NIFC-CA Live Fire Test (5) May 2017

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604366N / *Standard Missile Improvements*	Project (Number/Name) 3092 / *Standard Missile 6 Program*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Design & Analysis	C/CPIF	RAYTHEON : Tucson, AZ	700.935	24.263	Dec 2015	42.489	Nov 2016	46.109	Nov 2017	-		46.109	Continuing	Continuing	Continuing
Design & Analysis	C/CPFF	JHU/APL : Laurel MD	51.507	3.574	Dec 2015	5.088	Nov 2016	3.523	Nov 2017	-		3.523	0.000	63.692	-
Design & Analysis	MIPR	MIT/Lin Lab : Lexington, MA	0.550	0.000		0.000		0.000		-		0.000	0.000	0.550	-
Design & Analysis	WR	NAWC : China Lake	4.637	0.768	Nov 2015	0.363	Nov 2016	0.321	Nov 2017	-		0.321	0.000	6.089	-
Design & Analysis	WR	NSWC : Dahlgren	11.654	0.135	Nov 2015	0.160	Nov 2016	0.211	Nov 2017	-		0.211	0.000	12.160	-
Design & Analysis	WR	NSWC : Indian Head	3.917	0.025	Nov 2015	0.000		0.000		-		0.000	0.000	3.942	-
Design & Analysis	WR	NSWC : PHD	9.882	1.035	Nov 2015	0.150	Nov 2016	0.250	Nov 2017	-		0.250	0.000	11.317	-
Design & Analysis	WR	NSWC : Crane	1.256	0.000		0.000		0.000		-		0.000	0.000	1.256	-
Design & Analysis	MIPR	JSPO : Eglin AFB	24.049	0.000		0.000		0.000		-		0.000	0.000	24.049	-
Design & Analysis	C/CPFF	LOCKHEED Martin : Moorestown, NJ	6.074	0.000		0.000		0.000		-		0.000	0.000	6.074	-
Design & Analysis	WR	NSWC : Corona	18.108	2.125	Nov 2015	0.431	Nov 2016	1.000	Nov 2017	-		1.000	0.000	21.664	-
Design & Analysis	Reqn	ONR : Arlington, VA	5.320	0.000		0.000		0.000		-		0.000	0.000	5.320	-
Design & Analysis	Reqn	NRL : Washington, DC	0.090	0.050	Nov 2015	0.000		0.000		-		0.000	0.000	0.140	-
Design & Analysis	WR	COMPTEVFOR : Norfolk, VA	2.370	0.125	Nov 2015	0.125	Nov 2016	0.000		-		0.000	0.000	2.620	-
Design & Analysis	WR	CARDEROCK : Philadelphia, PA	3.058	0.600	Nov 2015	0.200	Nov 2016	0.200	Nov 2017	-		0.200	0.000	4.058	-
Design & Analysis	WR	NSWC : Pt Mugu	0.613	0.000		0.000		0.000		-		0.000	0.000	0.613	-
Design & Analysis	C/CPFF	BAE : Rockville, MD	6.446	0.040	Jan 2016	0.000		0.000		-		0.000	0.000	6.486	-
Design & Analysis	MIPR	ARMY : Redstone	0.350	0.000		0.000		0.000		-		0.000	0.000	0.350	-
Design & Analysis	WR	NAWCAD : Pax River, MD	1.448	2.264	Nov 2015	0.000		0.050	Nov 2017	-		0.050	0.000	3.762	-
Design & Analysis	C/CPFF	CORVID : Mooresville, NC	4.100	3.000	Nov 2015	3.000	Nov 2016	3.200	Nov 2017	-		3.200	0.000	13.300	-
Design & Analysis	C/CPFF	RNB : Arlington, VA	0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Design & Analysis	WR	SPAWAR : Arlington, VA	0.007	0.000		0.000		0.000		-		0.000	0.000	0.007	-
Design & Analysis	WR	ARMY : Cecom	0.066	0.000		0.000		0.000		-		0.000	0.000	0.066	-
Design & Analysis	C/FP	GENERAL DYNAMICS : Falls Church, VA	1.660	0.000		0.000		0.000		-		0.000	0.000	1.660	-
Design & Analysis	WR	VARIOUS : (IWS 1A)	74.265	15.317	Dec 2015	15.400	Nov 2016	0.000		-		0.000	0.000	104.982	-
Design & Analysis	WR	VARIOUS : (VLS)	25.274	0.050	Mar 2016	0.350	Nov 2016	0.000		-		0.000	0.000	25.674	-
Design & Analysis	WR	NSWC : WSMR	0.100	0.000		0.100	Nov 2016	0.000		-		0.000	0.000	0.200	-
Design & Analysis	WR	PMRF : Hawaii	0.772	2.334	Nov 2015	0.000		0.700	Nov 2017	-		0.700	0.000	3.806	-
Design & Analysis	WR	DOI : Washington D.C.	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	958.518	55.705		67.856		55.564		-		55.564	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC : Port Hueneme	2.706	1.723	Nov 2015	2.000	Nov 2016	1.700	Nov 2017	-		1.700	0.000	8.129	-
Developmental Test & Evaluation	WR	NSWC : WSMR	26.292	0.375	Mar 2016	0.625	Nov 2016	7.500	Nov 2017	-		7.500	0.000	34.792	-
Developmental Test & Evaluation	WR	PMRF : Hawaii	38.958	2.186	Nov 2015	1.157	Nov 2016	12.800	Nov 2017	-		12.800	0.000	55.101	-
Developmental Test & Evaluation	WR	NAWC : Pt Mugu	3.144	0.847	Nov 2015	0.200	Nov 2016	0.000		-		0.000	0.000	4.191	-
Developmental Test & Evaluation	C/CPAF	RAYTHEON : Tucson, AZ	20.292	17.125	Dec 2015	5.500	Nov 2016	6.500	Nov 2017	-		6.500	0.000	49.417	-
Developmental Test & Evaluation	C/CPFF	JHU/APL : Laurel, MD	10.281	3.182	Dec 2015	3.600	Nov 2016	0.941	Nov 2017	-		0.941	0.000	18.004	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC : Corona	7.218	3.158	Nov 2015	2.600	Nov 2016	0.600	Nov 2017	-		0.600	0.000	13.576	-
Developmental Test & Evaluation	WR	NSWC : Dahlgren	1.508	0.380	Nov 2015	0.578	Nov 2016	0.300	Nov 2017	-		0.300	0.000	2.766	-
Developmental Test & Evaluation	WR	VLS : Arlington, VA	2.044	0.325	Mar 2016	0.000		0.000		-		0.000	0.000	2.369	-
Developmental Test & Evaluation	WR	COMPTEVFOR : Norfolk, Va	1.364	0.150	Nov 2015	0.150	Nov 2016	0.225	Nov 2017	-		0.225	0.000	1.889	-
Developmental Test & Evaluation	WR	VARIOUS : (IWS 1A)	2.232	0.850	Dec 2015	0.700	Nov 2016	17.500	Nov 2017	-		17.500	0.000	21.282	-
Developmental Test & Evaluation	WR	NSWC : Carderock	2.000	0.280	Nov 2015	0.000		0.100	Nov 2017	-		0.100	0.000	2.380	-
Developmental Test & Evaluation	WR	NAWC : China Lake	0.000	0.194	Nov 2015	4.924	Nov 2016	0.480	Nov 2017	-		0.480	0.000	5.598	-
Developmental Test & Evaluation	WR	ONR : Arlington, Va	0.536	1.318	Nov 2015	1.571	Nov 2016	0.000		-		0.000	0.000	3.425	-
Developmental Test & Evaluation	WR	DOI : Washington D.C.	0.000	0.545	Nov 2015	0.000		0.000		-		0.000	0.000	0.545	-
		Subtotal	118.575	32.638		23.605		48.646		-		48.646	0.000	223.464	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Services	C/CPAF	VARIOUS : Various	28.281	3.912	Apr 2016	4.050	Nov 2016	4.117	Nov 2017	-		4.117	0.000	40.360	-
Travel	Various	IWS3 : Arlington, VA	1.282	0.070	Nov 2015	0.063	Nov 2016	0.063	Nov 2017	-		0.063	0.000	1.478	-
DAWDF	C/FP	Not Specified : Not Specified	1.130	0.000		0.000		0.000		-		0.000	0.000	1.130	-
		Subtotal	30.693	3.982		4.113		4.180		-		4.180	0.000	42.968	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,107.786	92.325		95.574		108.390		-		108.390	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 3092 / *Standard Missile 6 Program*

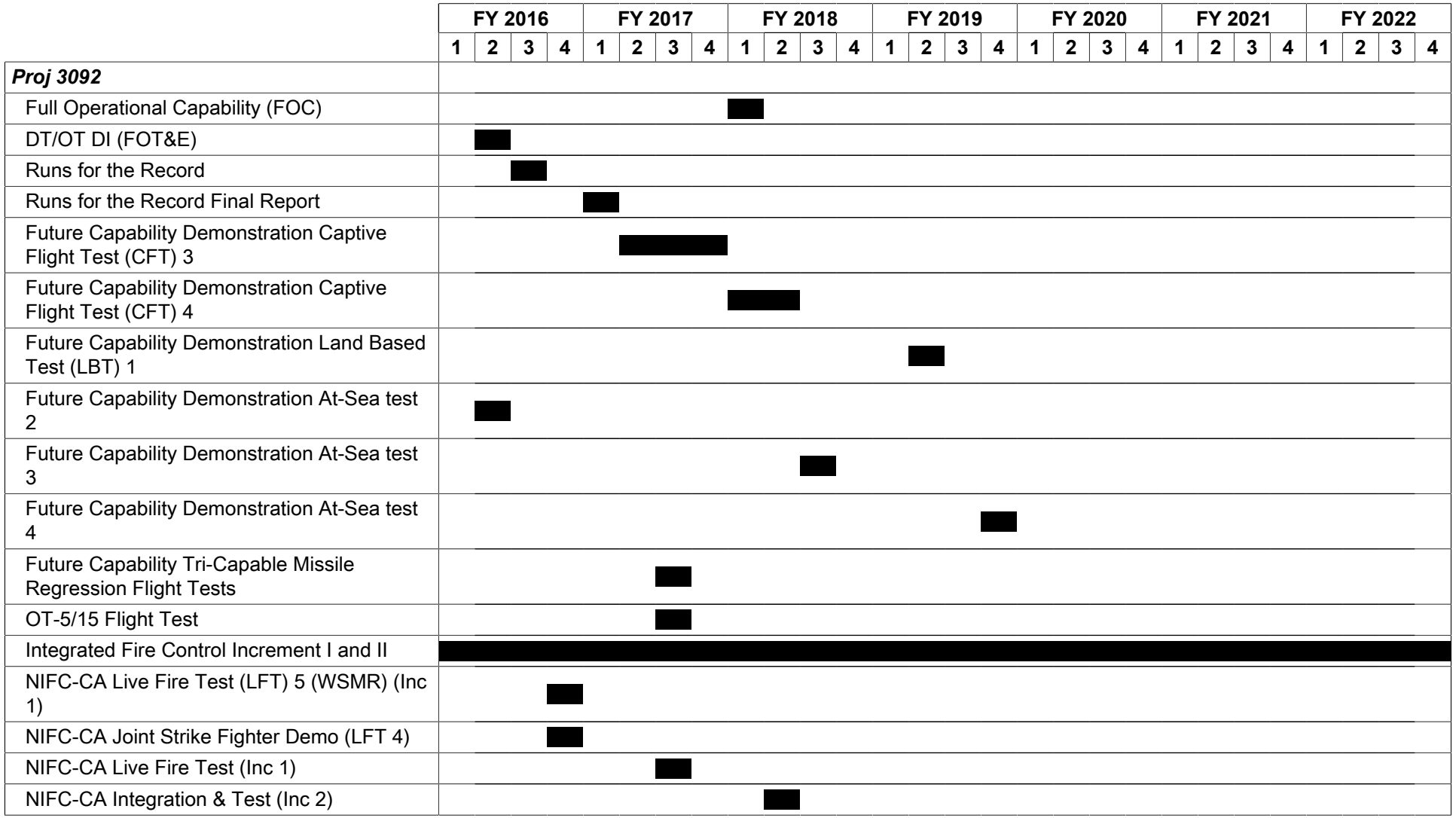


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 3092 / *Standard Missile 6 Program*

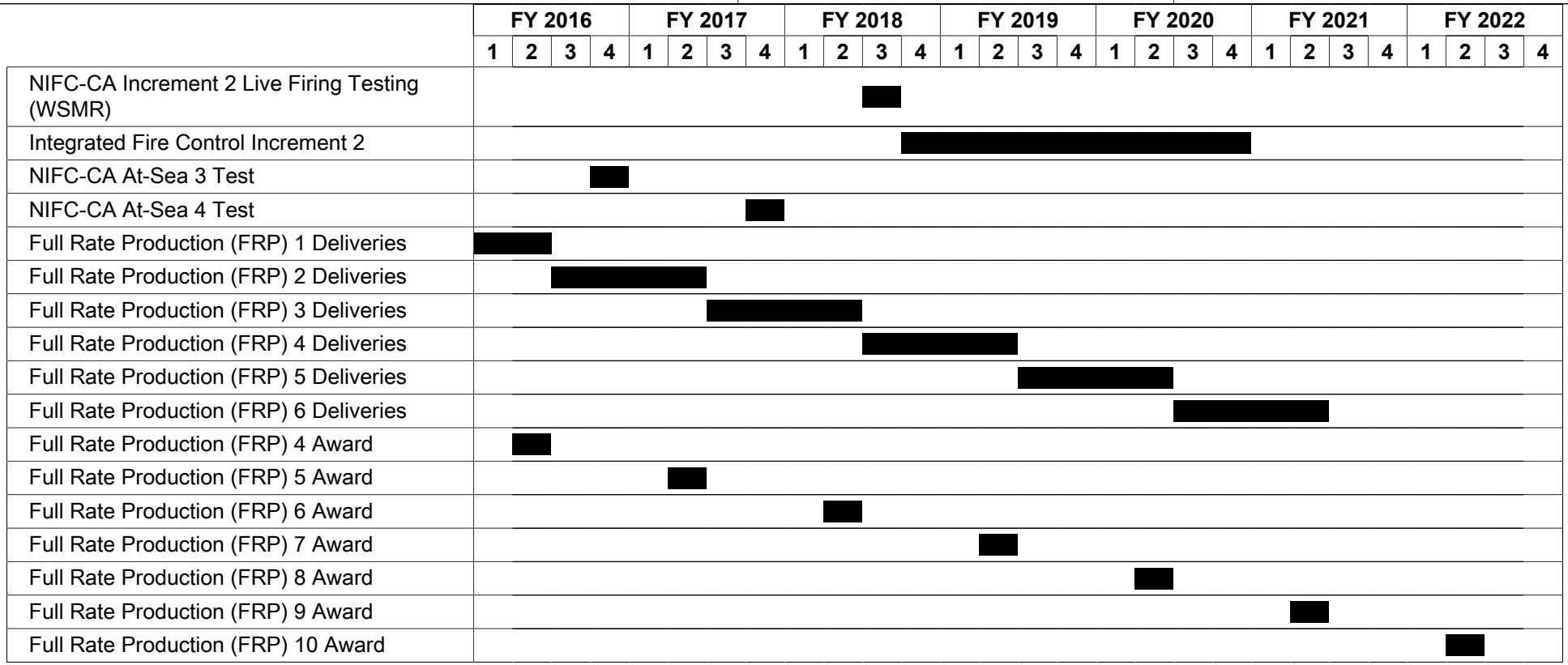


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 3092 / *Standard Missile 6 Program*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3092				
Full Operational Capability (FOC)	1	2018	1	2018
DT/OT DI (FOT&E)	2	2016	2	2016
Runs for the Record	3	2016	3	2016
Runs for the Record Final Report	1	2017	1	2017
Future Capability Demonstration Captive Flight Test (CFT) 3	2	2017	4	2017
Future Capability Demonstration Captive Flight Test (CFT) 4	1	2018	2	2018
Future Capability Demonstration Land Based Test (LBT) 1	2	2019	2	2019
Future Capability Demonstration At-Sea test 2	2	2016	2	2016
Future Capability Demonstration At-Sea test 3	3	2018	3	2018
Future Capability Demonstration At-Sea test 4	4	2019	4	2019
Future Capability Tri-Capable Missile Regression Flight Tests	3	2017	3	2017
OT-5/15 Flight Test	3	2017	3	2017
Integrated Fire Control Increment I and II	1	2016	4	2022
NIFC-CA Live Fire Test (LFT) 5 (WSMR) (Inc 1)	4	2016	4	2016
NIFC-CA Joint Strike Fighter Demo (LFT 4)	4	2016	4	2016
NIFC-CA Live Fire Test (Inc 1)	3	2017	3	2017
NIFC-CA Integration & Test (Inc 2)	2	2018	2	2018
NIFC-CA Increment 2 Live Firing Testing (WSMR)	3	2018	3	2018
Integrated Fire Control Increment 2	4	2018	4	2020
NIFC-CA At-Sea 3 Test	4	2016	4	2016
NIFC-CA At-Sea 4 Test	4	2017	4	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604366N / *Standard Missile Improvements*	**Project (Number/Name)** 3092 / *Standard Missile 6 Program*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Full Rate Production (FRP) 1 Deliveries	1	2016	2	2016
Full Rate Production (FRP) 2 Deliveries	3	2016	2	2017
Full Rate Production (FRP) 3 Deliveries	3	2017	2	2018
Full Rate Production (FRP) 4 Deliveries	3	2018	2	2019
Full Rate Production (FRP) 5 Deliveries	3	2019	2	2020
Full Rate Production (FRP) 6 Deliveries	3	2020	2	2021
Full Rate Production (FRP) 4 Award	2	2016	2	2016
Full Rate Production (FRP) 5 Award	2	2017	2	2017
Full Rate Production (FRP) 6 Award	2	2018	2	2018
Full Rate Production (FRP) 7 Award	2	2019	2	2019
Full Rate Production (FRP) 8 Award	2	2020	2	2020
Full Rate Production (FRP) 9 Award	2	2021	2	2021
Full Rate Production (FRP) 10 Award	2	2022	2	2022

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604373N *I Airborne Mine Countermeasures (AMCM)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	385.192	9.399	45.622	15.734	-	15.734	11.031	11.107	11.094	11.270	Continuing	Continuing
2047: *ALMDS*	197.782	3.396	18.570	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	219.748
2473: *Airborne Mine Neutralization System*	149.872	4.403	13.903	3.481	-	3.481	0.000	0.000	0.000	0.000	0.000	171.659
4026: *Strat Into Medal, Tactics & Trng Organic Force*	31.743	1.600	11.786	10.994	-	10.994	10.102	10.159	10.126	10.283	Continuing	Continuing
9179: *Surf Navy Integ Undersea Tactical Tech*	5.795	0.000	1.363	1.259	-	1.259	0.929	0.948	0.968	0.987	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element provides resources to develop advanced mine countermeasures equipment systems to counter known and projected mine threats. The mine countermeasures systems provide mobile, quick reaction forces capable of land or sea-based minehunting and minesweeping operations worldwide. Resources are for developing and deploying advanced mine-hunting and minesweeping systems and the intelligence and oceanographic capabilities that will enable mine warfare superiority. Tactics and techniques used vary across a diversity of environments and threats, including both asymmetric and emerging. Resources provide for systems and support of mine warfare systems, maritime systems, and expeditionary systems to allow for continuous operations of the Navy's warships and support vessels, other military vessels, and commercial vessels. Core capabilities include forward presence, deterrence, sea control, power projection, maritime security, humanitarian assistance and disaster response to maintain freedom of the seas. Capability improvements include conducting minefield reconnaissance (mine density and location) at high area search rates, improving detection capability, decreasing sensor false alarm rates, reducing or eliminating post-mission analysis detect, classify, identify, decide time, improving neutralization time, improving network communications, automatic target recognition, and achieving in-stride detect-to-engage capability. Concept of operations includes development of cooperative, unmanned, modular systems; the establishment of capable networked command and control systems; and standing up an accurate and interactive environmental system with the ability to form and disseminate a Common Environmental Picture. Other areas of importance include search and rescue; surface fire support; ASW operations; protection/offense against small craft/vehicles; air to air operations; very shallow water MCM; swimmer defense and torpedo defense. Efforts benefit the MCM force by transforming the Navy from the platform-centered legacy set of systems to a capability-centered force that is distributed, networked, and able to provide unique maritime influence and access across the entire maritime domain.

The Airborne Mine Countermeasures (AMCM) programs will provide detection, classification, localization, identification, neutralization, and influence clearance capabilities. This capability will be of critical importance in littoral zones, confined straits, choke points, and the Amphibious Objective Area (AOA).

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604373N *I Airborne Mine Countermeasures (AMCM)*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	9.647	45.622	45.944	-	45.944
Current President's Budget	9.399	45.622	15.734	-	15.734
Total Adjustments	-0.248	0.000	-30.210	-	-30.210
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.248	0.000			
• Program Adjustments	0.000	0.000	-1.325	-	-1.325
• Rate/Misc Adjustments	0.000	0.000	-28.885	-	-28.885

Change Summary Explanation

FY16 -$248K Total Adjustments: -$248K SBIR

FY17 No Change

FY18 -$30,210k Total Adjustments: -$1,325k other Program adjustments, -$28,885k Barracuda funding realignment to Surface Mine Warfare PE 0603502N

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	Project (Number/Name) 2047 / *ALMDS*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2047: *ALMDS*	197.782	3.396	18.570	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	219.748
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Airborne Laser Mine Detection System (ALMDS), designation AN/AES-1, is a light detection and ranging (LIDAR) Airborne Mine Countermeasures (AMCM) high area coverage system that detects, classifies, and localizes near-surface moored sea mines. The system is deployed from the MH-60S helicopter and will provide Organic Airborne Mine Countermeasures (OAMCM) defense to the battle force. The system represents a capability that does not exist in the current Mine Countermeasures (MCM) inventory.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Hardware and Software technology development and demonstration/Engineering Services:	1.616	9.839	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Engineering, oversight, and support of engineering efforts to meet baseline performance and P3I performance. ***FY 2016 Accomplishments:*** Continue to provide engineering services, pod repair, and maintenance. ***FY 2017 Plans:*** Continue to provide engineering services, pod repair and maintenance for ALMDS Increment 1, IOC in 1QFY17 and in preparation for FY18 Deployment. Performance modifications in support of FY18 deployment configuration. Test planning and coordination of software build 6005 flight characterization test 1Q-2QFY17 (conduct of test addressed in Test and Evaluation Section). Characterization of software build 6005 will qualify the build for fleet use and provide a baseline. Revise tactics guide based on test results and update mission planning. Test planning and coordination for flight characterization of the new software build 6006 in 4QFY17 for flight qualification and continued characterization (conduct of test addressed in Test and Evaluation Section). ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Integrated Logistics Support:	0.595	1.035	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 2047 / *ALMDS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Provided logistics support, depot analysis to LRIP units, IOCSR and preparation for 1QFY17 IOC. ***FY 2017 Plans:*** Provide logistics support, depot analysis to LRIP units and IOC in 1QFY17. Provide logistics support and documentation in preparation for FY18 deployment. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Testing and Evaluation:	0.602	7.495	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Conducted government acceptance testing of new computer processor and operating system. ***FY 2017 Plans:*** Conduct software build 6005 flight characterization test in 1QFY17, contractor support of test event and test support. Conduct software build 6006 flight characterization test and flight qualification in 4QFY17, contractor support of test event and test report. Planning for test addressed in HW/SW and Engineering Services. Conduct shipping container qualification testing. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Project Management:	0.583	0.201	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Completion of OA ***FY 2016 Accomplishments:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 2047 / *ALMDS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conducted program management, financial management and contractor support. ***FY 2017 Plans:*** Continue program management, financial management and contractor support. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	3.396	18.570	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN 4248: *Aviation Mine Countermeasures*	6.800	5.435	7.270	-	7.270	1.390	0.400	0.000	0.000	0.003	456.667
• OPN 1601: *LCS MCM Mission Modules*	10.028	0.000	10.228	-	10.228	5.291	5.450	6.721	6.856	1,002.735	1,129.293

Remarks

D. Acquisition Strategy

The program entered Production and Development Acquisition Phase following MS C in May 2005. August 2007 program authorized to meet full performance in two increments. The first LRIP lot was awarded as a new sole-source contract to the SD&D contractor in FY05. FRP will be based on Increment 1 performance. In FY14 a new competitive FFP production contract was awarded. This is a Fixed-Price Incentive (FPI) contract with cost and schedule incentives.

E. Performance Metrics

Conducted Operational Assessment (OA) Phase A in FY12. Conducted OA Phase B, Environmental Qualification Test (EQT), and Equipment Qualifications Test in FY14. Completed OA Phase B and DT phase 4 period 2 in FY14/15. Completed Mine Countermeasures Mission Package (MCM MP) TECHEVAL in FY15. Achieved IOC in FY17.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	Project (Number/Name) 2473 / *Airborne Mine Neutralization System*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2473: *Airborne Mine Neutralization System*	149.872	4.403	13.903	3.481	-	3.481	0.000	0.000	0.000	0.000	0.000	171.659
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Airborne Mine Neutralization System (AMNS) is a mine neutralization system, deployed from the MH-60S, MH-53E helicopters and the Common Unmanned Surface Vehicle (CUSV) using an expendable mine neutralization device.

The AMNS (Archerfish) will be deployed from the MH-60S helicopter with the capability to neutralize bottom and moored mines using an expendable mine neutralization device. These systems will provide organic airborne mine neutralization capability which will be of critical importance in littoral zones, confined straits, choke points and the Amphibious Objective Area (AOA). Barracuda provides an expendable, reacquisition, identification and neutralization capability against bottom, moored and Near Surface sea mines. Barracuda is deployed from both MH-60S multi mission helicopters and Unmanned Surface Vehicles (USV), or any craft of opportunity, using existing common communications, command & control and launching equipment. Barracuda will field a baseline capability derived from the single sortie detect to engage (SS-DTE) future naval capabilities (FNC) effort. Barracuda addresses unmet requirements in near surface neutralization created with the cancellation of the RAMICS program in FY13. With baseline upgrades the system is suitable for mine neutralization in the full water column.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: AMNS: Development/Engineering Support	3.016	5.488	3.181	0.000	3.181
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Provided engineering support, including review for product development and integration. Developed logistics products, including training materials and interactive technical manuals. Prepared for Initial Operations Capability in 1QFY17.					
FY 2017 Plans: Provide engineering support, including review for product development and integration. Develop logistics products, including training materials and interactive technical manuals. Provide engineering support for upgrade development and develop associated logistics products.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 2473 / *Airborne Mine Neutralization System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to provide engineering support, including review for product development and integration. Develop logistics products, including training materials and interactive technical manuals. Provide engineering support for upgrade development and develop associated logistics products. ***FY 2018 OCO Plans:*** N/A					
Title: AMNS: Test and Evaluation ***Articles:*** ***FY 2016 Accomplishments:*** Conducted FOT&E of LCS Mine Countermeasures (MCM) Mission Package (MP). ***FY 2017 Plans:*** Conduct AMNS Alternate Fiber and Dash4 configuration testing as well as P3I/ECP upgrade tests. ***FY 2018 Base Plans:*** Continue to conduct AMNS P3I/ECP upgrade tests. ***FY 2018 OCO Plans:*** N/A	0.725 -	0.500 -	0.138 -	0.000 -	0.138 -
Title: Barracuda: Product Development ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Design and develop Barracuda specifications that provide near surface neutralization capability. Develop and release RFP and conduct source selection. Develop Milestone B documentation. ***FY 2018 Base Plans:*** Funding realigned to 0603502N, project 2928 beginning in FY18. ***FY 2018 OCO Plans:*** N/A	0.000 -	5.703 -	0.000 -	0.000 -	0.000 -
Title: AMNS: Management Services ***Articles:***	0.662 -	0.305 -	0.162 -	0.000 -	0.162 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 2473 / *Airborne Mine Neutralization System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Provided program management support, contract management and travel for AMNS. ***FY 2017 Plans:*** Provide program management support, contract management and travel for AMNS. ***FY 2018 Base Plans:*** Continue to provide program management support, contract management and travel for AMNS. ***FY 2018 OCO Plans:*** N/A					
Title: Barracuda: Engineering Support ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Develop Request for Proposal (RFP), conduct risk reduction prototyping, tactics analyses and general system engineering support in preparation for source selection. ***FY 2018 Base Plans:*** Funding realigned to 0603502N, project 2928 beginning in FY18. ***FY 2018 OCO Plans:*** N/A	0.000 -	1.261 -	0.000 -	0.000 -	0.000 -
Title: Barracuda: Management Services ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Provide program management, financial management, and engineering support. ***FY 2018 Base Plans:***	0.000 -	0.646 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 2473 / *Airborne Mine Neutralization System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Funding realigned to 0603502N, project 2928 beginning in FY18. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	4.403	13.903	3.481	0.000	3.481

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN 4248: *Aviation Mine Countermeasures*	6.800	5.435	7.270	-	7.270	1.390	0.400	0.000	5.289	0.003	461.956
• WPN 4225: *Airborne Mine Neutralization Systems*	7.766	12.927	12.927	-	12.927	12.893	10.137	10.337	10.428	0.001	198.924
• OPN 1601: *LCS MCM Mission Modules*	10.028	0.000	10.228	-	10.228	5.291	5.450	6.721	6.856	860.567	987.125

Remarks

Other APPN/LI Funding lines are shared. Amounts shown reflect only AMNS funds.

D. Acquisition Strategy

AMNS: The Navy has successfully completed Developmental Testing (Inert) on MH-60S, and conducted TECHEVAL tests on LCS with the MH-60S. The Navy has awarded a sole source contract to BAE for neutralizer procurements (WPN) to accompany the Launch and Handling Systems (LHS).
Barracuda: Field the baseline system to address near surface portion of water column. Develop block upgrades to follow for deeper parts of the water column and develop software upgrades to baseline system.

E. Performance Metrics

AMNS:Successful completion of Testing and IOC was achieved in November 2016.
Barracuda: Successful fielding of the Barracuda system.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	Project (Number/Name) 4026 / *Strat Into Medal, Tactics & Trng Organic Force*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
4026: *Strat Into Medal, Tactics & Trng Organic Force*	31.743	1.600	11.786	10.994	-	10.994	10.102	10.159	10.126	10.283	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The C4I, Tactics, Mission Planning (CTMP), and Post Mission Analysis (PMA) program is an initiative that has evolved into both developing MEDAL modules for each Next Generation MCM system and developing Next Generation Tactics. Additionally CTMP provides threat data and system requirements and capabilities to the MEDAL software development effort. Finally CTMP develops Net-Centric Sensor Analysis for Mine Warfare (NSAM) as an Open Systems Architecture (OSA) compliant plug-in architecture of common post-mission analysis tools for PMA of Next Generation MCM sensor data.

NSAM analysis tools will provide the capability to perform tactical and environmental Post Mission Analysis (PMA) on data collected from various MCM sensor systems. The goal is to reduce the mission timeline and increase the mission effectiveness with respect to Mission Analysis. NSAM will have a training mode to maintain operator proficiency and PMA skill set. NSAM will be the replacement for Organic Post Missions Analysis (OPMA) in the Fleet, integrating ALMDS, AMNS, AN/AQS-20 Sensor PMA into the first delivered Fleet Build. Future incremental Builds, fielding on a 12-18 month cycle, will add support for AN/AQS-24B/C, COBRA, Knifefish, CUSV, and ExMCM UUV sensors.
NSAM provides Multi-Data Set, Multi-User, Tactical & Environmental PMA, Contact Management, and Change Detection.
OSA reduces cost for adding future MCM Systems.
The analysis results from PMA are provided to the Mine Warfare and Environmental Decisions Aid Library (MEDAL) reducing False Call reporting for tactical decision making.
NSAM will implement Cybersecurity Requirements using the new Risk Management Framework (RMF) Process.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: NSAM Product Development	0.731	8.924	5.305	0.000	5.305
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Transitioned Legacy Organic Post Mission Analysis (OPMA) software to Windows 7 environment and corrected software deficiencies identified during LCS MCM MP Increment One TECHEVAL, in preparation for FY18 LCS Deployment. Continued NSAM Open Architecture software development for both Server and Client components. The scope of NSAM Build 1 work provides PMA support for ALMDS, AMNS, and AN/AQS-20A MCM Systems. Initiated new Risk Management Framework (RMF) processes to address Cybersecurity.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 4026 / *Strat Into Medal, Tactics & Trng Organic Force*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Complete NSAM Open Architecture software development Increment 1 Build 1 that includes PMA support for ALMDS, AMNS, and AN/AQS-20A MCM Systems. Complete Development of Requirements for Increment 1 Build 2. Continue applying Risk Management Framework (RMF) guidelines and strategy to stay on course for achieving an Authority to Operate (ATO). Continue tailoring and generating acquisition and logistics documents as required for supporting software intensive systems. Complete Requirements Definition Package (RDP) approvals for NSAM Increment 1 Build 2 finalizing the next series of additional MCM system support for AN/AQS-24B/C, COBRA, Knifefish, CUSV, and ExMCM UUV sensors. Continue work on NSAM Logistics Package and Training Material. ***FY 2018 Base Plans:*** Deliver final tested NSAM Increment 1 Build 1 to LCS Mission Package Application System (MPAS) and complete NSAM Logistics Package and Training Material. Continue NSAM Build 2 Open Architecture software development to address LCS capability gaps and additional MCM systems chosen in the RDP from the list above. Continue applying Risk Management Framework (RMF) guidelines and strategy to address all Cybersecurity protocols. ***FY 2018 OCO Plans:*** N/A					
Title: Engineering Services/ILS:	0.711	2.300	3.864	0.000	3.864
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Provided dedicated tactical support for integrated operations using Mission Package Application Software (MPAS) and NSAM Engineering support. Continued working "Susceptibility of Ships to Threat Mines," Navy Tactical Reference Publication (NTRP) 3-15.2.2. Provided tactical support & Tools for contact management for the MCM Mission Package (MP). Investigated the current multi-pass tactics for several systems and develop common algorithm and metrics. Document processes and procedures as well as tactics executed at the MCM Commander (MCMC) Staff Level. Documented the tactics & guidance to employ Effects Based Application of Risk (EBAR) in a TACMEMO. ***FY 2017 Plans:*** Provide dedicated tactical support for integrated operations using Mission Package Application Software (MPAS) and NSAM Engineering support. Publish Susceptibility of Ships to Threat Mines, Navy Tactical Reference Publication (NTRP) 3-15.2.2. Validate tactics & guidance to employ Effects Based Application of Risk (EBAR) in a TACMEMO and provide an EBAR technical data package for future inclusion in the MEDAL TDA. Conduct					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 4026 / *Strat Into Medal, Tactics & Trng Organic Force*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
study on the impact of using kick-off velocity (KOV) versus keel shock factor (KSF) in computing damage width providing updated algorithms to Mine Warfare and Environmental Decisions Aid (MEDAL) planning system. Investigate and document implications to math and MCM theory assuming dependence in sonar/sensor observations and deliver results to NSAM team to better implement multi-passes tactics based on system dependence. ***FY 2018 Base Plans:*** Continue updates for the Susceptibility of Ships to Threat Mines, Navy Tactical Reference Publication (NTRP) 3-15.2.2: Complete chapters for additional Mines for Fleet validated ship list. Support training needs for AMNS, ALMDS and AN/AQS-20 post IOT&E and for Increment 2 of the MCM MP. Develop Airborne Mine Countermeasures (AMCM) (U) Navy Tactics, Training and Procedure (NTTP) Volume II, 3.15.22. Investigate and document Intelligence Preparation of the Environment (IPOE) gaps in LCS Tactics. ***FY 2018 OCO Plans:*** N/A					
Title: Test and Evaluation ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Complete Testing NSAM Build 2 to include: Integration testing in the LCS Mission Package Integration Laboratory (MPIL) and an Independent Developers Test (DT). ***FY 2018 OCO Plans:*** N/A	0.000 -	0.000 -	1.478 -	0.000 -	1.478 -
Title: Management Support ***Articles:*** ***FY 2016 Accomplishments:*** Provided leadership, scheduling, monitoring and reporting status of the tasks:	0.158 -	0.562 -	0.347 -	0.000 -	0.347 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 4026 / *Strat Into Medal, Tactics & Trng Organic Force*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Plan, track and report personnel, funding, and execution status of tasks to the Assistant Program Manager (APM) for schedule, costs, risks, and deliverables for program execution tracking. ***FY 2017 Plans:*** Provide leadership, scheduling, monitoring and reporting status of the tasks: Plan, track and report personnel, funding, and execution status of tasks to the Assistant Program Manager (APM) for schedule, costs, risks, and deliverables for program execution tracking. ***FY 2018 Base Plans:*** Providing leadership, scheduling, monitoring and reporting status of the tasks: Plan, track and report personnel, funding, and execution status of tasks to the Assistant Program Manager (APM) for schedule, costs, risks, and deliverables for program execution tracking. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.600	11.786	10.994	0.000	10.994

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Organic Post-Mission Analysis (OPMA) capability for the OAMCM systems was developed by NSWC PCD, Panama City, FL. OMN funding will be used to procure COTS ruggedized portable OPMA computers for LCS MCM Mission Package, ship of opportunity deployments, land basing, and training. NSWC-PCD has awarded contract for this Technical Refresh procurement with option years extending until FY18. NSAM will merge capabilities of OPMA and NAVO's Environmental PMA (EPMA) capabilities into an Open Architecture framework. Increment Build One will utilize government teams NSWC PCD and NRL-SSC to expedite fielding significant contact management improvements, data fusion techniques, and environmental PMA.

The tactics development, tactics training, and tactics algorithms/database efforts are performed by NSWC-PCD. These efforts will provide reach back support as the OAMCM systems begin to be fielded; will develop modifications to environmental databases necessary to support OAMCM mission planning; will update the MIW Tactics Continuum to address OAMCM; and will update the gear and mine database for threats addressed by the OAMCM systems.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 4026 / *Strat Into Medal, Tactics & Trng Organic Force*

E. Performance Metrics

Successfully integrate NSAM into LCS Mission Package and provide Training Material to AMCM Detachments. Deliver Mine Warfare Naval Tactical Publications and TACMEMOs to NWDC in near publication ready formats in support of MCM Staffs and LCS MCM MP Operators.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	Project (Number/Name) 4026 / *Strat Into Medal, Tactics & Trng Organic Force*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Software Development	WR	NSWC PCD : Panama City FL	18.876	0.558	Nov 2015	5.609	Oct 2016	4.227	Oct 2017	-		4.227	Continuing	Continuing	Continuing
Hardware/Software Development	WR	NRL-SSC : Bay St. Louis, MS	0.950	0.173	Dec 2015	1.320	May 2017	1.078	Dec 2017	-		1.078	Continuing	Continuing	Continuing
		Subtotal	19.826	0.731		6.929		5.305		-		5.305	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Services	WR	SSC-PAC : Various	0.040	0.000		0.000		0.000		-		0.000	0.000	0.040	-
Engineering Services	WR	NSWC PCD : Panama City FL	8.231	0.459	Nov 2015	3.149	May 2017	2.845	Nov 2017	-		2.845	Continuing	Continuing	Continuing
Engineering Services	WR	NRL-SSC : Bay St. Louis, MS	0.462	0.132	Nov 2015	0.250	May 2017	0.238	Dec 2017	-		0.238	Continuing	Continuing	Continuing
ILS	WR	NSWC PC : Panama City FL	1.625	0.120	Nov 2015	0.413	May 2017	0.781	Nov 2017	-		0.781	Continuing	Continuing	Continuing
		Subtotal	10.358	0.711		3.812		3.864		-		3.864	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NSAM Test and Evaluation	WR	NSWC PC : Panama City, FL	0.000	0.000		0.612	Oct 2016	1.054	Oct 2017	-		1.054	0.000	1.666	-
NSAM Test and Evaluation	WR	NRL-SSC : Bay St Louis, MS	0.000	0.000		0.128	Nov 2016	0.424	Nov 2017	-		0.424	0.000	0.552	-
		Subtotal	0.000	0.000		0.740		1.478		-		1.478	0.000	2.218	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	Project (Number/Name) 4026 / *Strat Into Medal, Tactics & Trng Organic Force*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Support	WR	NSWC PC : Panama City FL	1.546	0.158	Oct 2015	0.305	May 2017	0.347	Nov 2017	-		0.347	Continuing	Continuing	Continuing
Acquisition Workforce Fund	Various	Various : Various	0.013	0.000		0.000		0.000		-		0.000	0.000	0.013	-
		Subtotal	1.559	0.158		0.305		0.347		-		0.347	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	31.743	1.600		11.786		10.994		-		10.994	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 4026 / *Strat Into Medal, Tactics & Trng Organic Force*

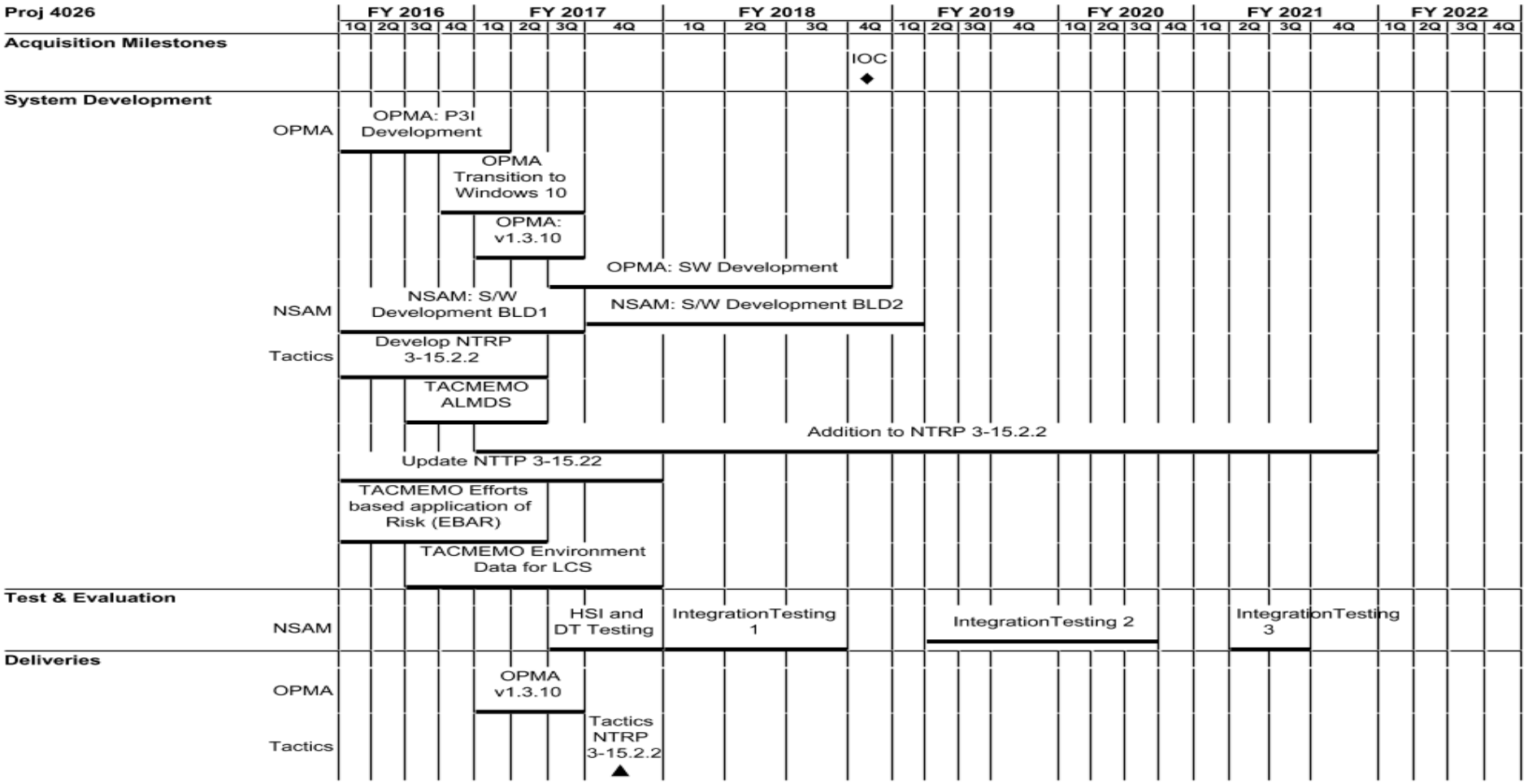
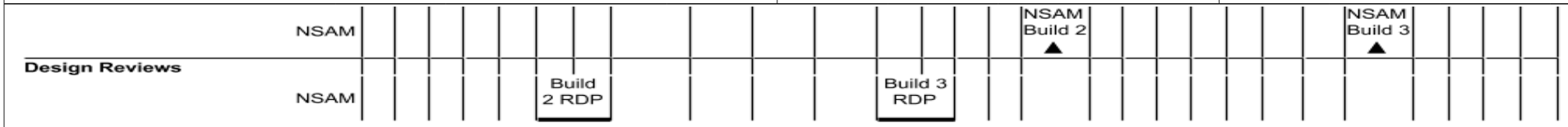


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 4026 / *Strat Into Medal, Tactics & Trng Organic Force*



2018DON - 0604373N - 4026

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 4026 / *Strat Into Medal, Tactics & Trng Organic Force*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4026				
Acquisition Milestones: NSAM: Initial Operational Capability	4	2018	4	2018
System Development: OPMA: OPMA: Ongoing Development for Sensor P3I; Software	1	2016	1	2017
System Development: OPMA: OPMA: Transition to Windows	4	2016	3	2017
System Development: OPMA: OPMA: Deliver OPMA v1.3.10 for FY18 LCS Deployment	1	2017	3	2017
System Development: OPMA: OPMA: Ongoing Development post Deployment; Software	3	2017	4	2018
System Development: NSAM: NSAM: S/W Development Increment 1 Build 1	1	2016	3	2017
System Development: NSAM: NSAM: S/W Development Increment 1 Build 2	4	2017	1	2019
System Development: NSAM: NSAM: S/W Development Increment 1 Build 3	2	2019	1	2021
System Development: Tactics: Develop NTRP 3-15.2.2	1	2016	2	2017
System Development: Tactics: TACMEMO ALMDS	3	2016	2	2017
System Development: Tactics: Add additional Mines to NTRP 3-15.2.2 Susceptibility of Ships to Threat Mines	1	2017	4	2021
System Development: Tactics: Update NTTP 3-15.22	1	2016	4	2017
System Development: Tactics: TACMEMO Efforts based application of Risk (EBAR)	1	2016	2	2017
System Development: Tactics: Tactics: TACMEMO Environment Data for LCS MCM Systems	3	2016	4	2017
Test & Evaluation: NSAM: NSAM: LCS MCMM MP MPCE Integration Testing 1	1	2018	3	2018
Test & Evaluation: NSAM: NSAM: LCS MCMM MP MPCE Integration Testing 2	2	2019	3	2020
Test & Evaluation: NSAM: NSAM: LCS MCMM MP MPCE Integration Testing 3	2	2021	3	2021
Test & Evaluation: NSAM: NSAM: Human Systems Integration (HSI) and DT Testing	3	2017	4	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 4026 / *Strat Into Medal, Tactics & Trng Organic Force*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Deliveries: OPMA: OPMA: Deliver OPMA v1.3.10 for FY18 LCS Deployment	1	2017	3	2017
Deliveries: Tactics: Tactics: Publish NTRP 3-15.2.2 Susceptibility of Ships to Threat Mines	4	2017	4	2017
Deliveries: NSAM: NSAM: Capability Drop Build 2	4	2019	4	2019
Deliveries: NSAM: NSAM: Capability Drop Build 3	4	2021	4	2021
Design Reviews: NSAM: NSAM: Build 2 Requirements Design Package (RDP)	2	2017	3	2017
Design Reviews: NSAM: NSAM: Build 3 Requirements Design Package (RDP)	4	2018	1	2019

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	Project (Number/Name) 9179 / *Surf Navy Integ Undersea Tactical Tech*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9179: *Surf Navy Integ Undersea Tactical Tech*	5.795	0.000	1.363	1.259	-	1.259	0.929	0.948	0.968	0.987	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Surface Navy Integrated Undersea Tactical Technology (SNIUTT) will be used to develop an AN/SQQ-32, AN/AQS-24 and AN/AQS-20A sensor training modules and future Organic Airborne Mine Countermeasures (OAMCM) Sensor Training Modules for systems such as AMNS, ALMDS, and COBRA.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Engineering and Integration and Logistics Services	0.000	0.000	0.245	0.000	0.245
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: N/A					
FY 2018 Base Plans: Continue to provide SNIUTT In Service Engineering Agent (ISEA) and development support.					
FY 2018 OCO Plans: N/A					
Title: Hardware and Software Development	0.000	1.363	1.014	0.000	1.014
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Update the AN/AQS-24, AN/AQS-20A sonar training module. Continue development of a Scenario Generator software system for COBRA for mine field recognition training and ALMDS training modules.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604373N / *Airborne Mine Countermeasures (AMCM)*	**Project (Number/Name)** 9179 / *Surf Navy Integ Undersea Tactical Tech*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to update the AN/AQS-24, AN/AQS-20A sonar training module. Continue development of a Scenario Generator software system for COBRA for mine field recognition training and ALMDS training modules. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	1.363	1.259	0.000	1.259

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Surface Navy Integrated Undersea Tactical Training (SNIUTT) has been used to develop AN/SQQ-32, AN/AQS-24 and AN/AQS-20A sensor training modules. Funds will continue to support training for these sonar systems, as well as training for the REMUS sonar systems and other OAMCM systems such as AMNS, ALMDS and COBRA in the same format as previous training. The SNIUTT sensor training modules will be developed by NSWC PCD, Panama City, FL,. Funds are being provided for development and delivery of refresher scenario based contact recognition training, and the update and modification of contact recognition training (interactive web based training and proficiency focused stand-alone training) in support of the SNIUTT program.

E. Performance Metrics

Successfully integrate SNIUTT into the school house training facility and provide to AMCM detachments for refresher training.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604376M *I (U)Marine Air Grnd Task Force(MAGTF)EW for Aviatio*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	32.827	3.281	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	36.108
3327: *MAGTF EW Aviation Development*	27.687	1.654	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	29.341
3371: *MAGTF EW Interoperability Development*	5.140	1.627	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.767

Note

The AN/ALQ-231(V)1 for Rotary Wing aircraft was re-designated AN/ALQ-231(V)3 by Assistant Secretary of the Navy for Research, Development and Acquisition (ASN(RD&A)).

A. Mission Description and Budget Item Justification

This program element includes development of Electronic Warfare (EW) systems for the United States Marine Corps (USMC) tactical aircraft, USMC helicopters, unmanned air vehicles, data link vulnerability assessments, precision targeting, United States Navy (USN) and USMC radio frequency jammers, and development and testing of EW devices on emerging platforms to combat emerging threats and emergency contingencies.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

PE 0604376M consolidated to PE 0604270N beginning in FY 2017.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	2.778	0.000	0.000	-	0.000
Current President's Budget	3.281	0.000	0.000	-	0.000
Total Adjustments	0.503	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.547	0.000			
• SBIR/STTR Transfer	-0.044	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604376M *I (U)Marine Air Grnd Task Force(MAGTF)EW for Aviatio*

Change Summary Explanation

Technical: N/A

Schedule: N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604376M / *(U)Marine Air Grnd Task Force(MAGTF)EW for Aviatio*	Project (Number/Name) 3327 / *MAGTF EW Aviation Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3327: *MAGTF EW Aviation Development*	27.687	1.654	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	29.341
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

PE 0604376M was consolidated to PE 0604270N beginning in FY 2017 pursuant to Principal Deputy Assistant Secretary of the Navy (Financial Management and Comptroller) (PDASN (FM&C)) memorandum signed 5 December 2014.

A. Mission Description and Budget Item Justification

This project unit supports the United States Marine Corps development of Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) and the various elements of its distributed System of Systems (SoS) that support the Commandant of the Marine Corps' Strategy and Vision 2025 and Joint Vision 2025. The SoS will address MAGTF EW sufficiency gaps in the areas of Electronic Attack, EW Support, and Electronic Protection with a multitude of payloads designed for carriage on a variety of organic MAGTF air and ground assets. Payload development plans follow an adaptable, modular and open architecture philosophy to combat the increasing capability gap and enable future growth at a reduced operational and sustainment cost.

The AN/ALQ-231(V)1 pod is the Fixed-Wing variant of the Intrepid Tiger II pod flown on the AV-8B and F/A-18A-D platforms. The AN/ALQ-231(V)2 will be the variant of the Intrepid Tiger II pod flown on unmanned aerial vehicle (UAV) platforms once integration is complete. The AN/ALQ-231(V)3 is the Rotary-Wing variant of the Intrepid Tiger II pod flown on the AH-1 and UH-1 platforms. As of the PresBud15 submission, the AN/ALQ-231(V)1 was the only approved configuration and nomenclature for the Intrepid Tiger II pod. The re-designation of the ALQ-231 variants occurred with the approval of Rapid Deployment Capability authorization for AN/ALQ-231 on Rotary Wing platforms by the Assistant Secretary of the Navy for Research, Development and Acquisition (ASN(RD&A)) on January 14, 2014.

Commencing in FY 2017, Intrepid Tiger II efforts are budgeted under PE 0604270N, PU 3327.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Intrepid Tiger II (AN/ALQ-231)	1.654	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: The Intrepid Tiger II (AN/ALQ-231) program continued to mature hardware technology, updated targeting techniques, and corrected identified software discrepancies. Work has continued to identify Intrepid Tiger II based solutions to radar threats in support of the penetrating jammer mission, culminating in the AN/ALQ-231(V)1 BLK X Radar Jammer. Investigated potential for integration of the Intrepid Tiger II capability					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604376M / *(U)Marine Air Grnd Task Force(MAGTF)EW for Aviatio*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
on tilt-rotor and C-130 platforms. Continued research efforts to develop an enabling capability to facilitate Collaborative EW (CEW) through shared organic, national and spaced Electronic Surveillance and coordinated non-kinetic fires (electronic attack) in accordance with spectrum operations objectives by linking Command and Control (C2), operators and sensors across a network interface, and continued to explore uses for Intrepid Tiger II with the Cyber Electronic Warfare Coordination Cell (CEWCC). ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.654	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0587: *MAGTF EW for Aviation*	7.680	21.976	10.111	-	10.111	11.810	41.694	31.329	34.061	59.337	306.795

Remarks

D. Acquisition Strategy

This project unit is part of United States Marine Corps led efforts to ensure Marine Corps requirements are included in the budget process for the Future Year Defense Program and beyond. These efforts include AN/ALQ-231 Intrepid Tiger II(V)1, Intrepid Tiger II(V)2, Intrepid Tiger II(V)3, Collaborative Electronic Warfare (EW)/EW Battle Management, EW Payload, and EW Service Architecture (formerly Collaborative Online Reconnaissance Provider Operationally Responsive Attack Link). These programs are the Marine Corps' initial steps to create systems to distribute EW capability across the battle space.

E. Performance Metrics

Successful completion of Intrepid Tiger II(V)3 (AN/ALQ-231) Initial Operational Capability (IOC). Commencement of research into Engineering Change Proposals (ECPs) for capability upgrades for Intrepid Tiger II(V)1 and Intrepid Tiger II(V)3 pods.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604376M / *(U)Marine Air Grnd Task Force(MAGTF)EW for Aviatio*	Project (Number/Name) 3371 / *MAGTF EW Interoperability Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3371: *MAGTF EW Interoperability Development*	5.140	1.627	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.767
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

In FY17 this PU will move into PE 0604270N.

A. Mission Description and Budget Item Justification

This project unit supports the United States Marine Corps Air-Ground interoperability by providing a variety of capabilities through multiple functions of the Software Reprogrammable Payload (SRP) when installed onboard SRP capable aircraft. The spiral development plans allow adaptable, scalable and open architecture philosopy to reduce stove pipe solutions but enable future growth at a reduced operational and sustainment cost.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Software Reprogrammable Payload	1.627	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue integration of the SRP on the United States Marine Corps MV-22 Platform.					
FY 2017 Plans: N/A					
FY 2018 Base Plans: N/A					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.627	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604376M / *(U)Marine Air Grnd Task Force(MAGTF)EW for Aviatio*	**Project (Number/Name)** 3371 / *MAGTF EW Interoperability Development*

D. Acquisition Strategy

This project unit is part of United States Marine Corps led efforts to ensure Marine Corps requirements are included in the budget process for the Future Year Defense Program and beyond. This effort is for the Software Reprogrammable Payload. This program is part of the Marine Corps initial steps to create a common interoperable system to distribute multiple data types across the battle space through spiral development.

E. Performance Metrics

Successful completion of the Spiral 2 Development and Demonstration onboard MV-22 Test Platform.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604378N *I Nav Integrated Fire Control-Counter Air Sys Eng*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	166.399	22.960	25.750	25.445	-	25.445	26.769	25.649	25.354	25.862	Continuing	Continuing
3159: *Naval Integrated Fire Control-Counter Air SE&I*	166.399	22.960	25.750	25.445	-	25.445	26.769	25.649	25.354	25.862	Continuing	Continuing

A. Mission Description and Budget Item Justification

3159 Naval Integrated Fire Control - Counter Air (NIFC-CA) Systems Engineering Integration and Test (SEI&T) project is a systems engineering effort to extend the Naval Integrated Air and Missile Defense battlespace out to the maximum kinematic range of our weapons. This includes targets beyond the detection range of the shooter, including Engage On Remote (EoR) and Over the Horizon (OTH) targets. The NIFC-CA project exploits capabilities inherent in existing systems, optimizes current and emerging technologies in component system upgrades, integrates them together, and performs kill chain tests, forming an interoperable System of Systems (SoS) to maximize future air defense capabilities. As directed by OPNAV, the project is focused on SEI&T efforts to integrate the From The Sea (FTS) kill chain consisting of the E-2D Advanced Hawkeye, Cooperative Engagement Capability (CEC), AEGIS, and SM-6 missile. This PE will support efforts including system definition and architecture development, performance prediction, performance assessment, system test and risk reduction efforts, system analysis, modeling and simulation, and capability demonstrations for the FTS kill chain. The project also facilitates the development of the concept of operations with the warfighter to maximize effectiveness when deployed with the Fleet.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	23.695	25.750	27.359	-	27.359
Current President's Budget	22.960	25.750	25.445	-	25.445
Total Adjustments	-0.735	0.000	-1.914	-	-1.914
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.735	0.000			
• Program Adjustments	0.000	0.000	-1.751	-	-1.751
• Rate/Misc Adjustments	0.000	0.000	-0.163	-	-0.163

Change Summary Explanation

The FY 2018 funding request was reduced by $0.550 million to account for the availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	Project (Number/Name) 3159 / *Naval Integrated Fire Control-Counter Air SE&I*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3159: *Naval Integrated Fire Control-Counter Air SE&I*	166.399	22.960	25.750	25.445	-	25.445	26.769	25.649	25.354	25.862	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

3159 Naval Integrated Fire Control - Counter Air (NIFC-CA) Systems Engineering Integration and Test (SEI&T) project is a systems engineering effort to extend the Naval Integrated Air and Missile Defense battlespace out to the maximum kinematic range of our weapons. This includes targets beyond the detection range of the shooter, including Engage On Remote (EoR) and Over the Horizon (OTH) targets. The NIFC-CA project exploits capabilities inherent in existing systems, optimizes current and emerging technologies in component system upgrades, integrates them together, and performs kill chain tests, forming an interoperable System of Systems (SoS) to maximize future air defense capabilities. NIFC-CA consists of three kill chains called From the Air (FTA), From the Sea (FTS), and From the Land (FTL). As directed by OPNAV, the project is focused on SEI&T efforts to integrate the From The Sea (FTS) kill chain consisting of the E-2D Advanced Hawkeye, Cooperative Engagement Capability (CEC), AEGIS, and SM-6 missile. This PE will support efforts including system definition and architecture development, performance prediction, performance assessment, system test and risk reduction efforts, system analysis, modeling and simulation, and capability demonstrations for the FTS kill chain. The project also facilitates the development of the concept of operations with the warfighter to maximize effectiveness when deployed with the Fleet.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Integration and Test (I&T) Integrated Product Team (IPT)	9.415	10.528	10.320	0.000	10.320
Articles:	-	-	-	-	-
Description: The Integration and Test (I&T) Integrated Product Team (IPT) develops and executes the test plan to assess the FTS operational capability, performs risk reduction testing leveraging various component system tests. Test data will be used over time to verify, validate, and accredit the FTS simulation federation.					
FY 2016 Accomplishments: Two Live Fire Events were successfully completed in 4Q16. The third Live Fire Test Event that was scheduled in 4Q16 was rescheduled to 3Q17 due to range availability.					
FY 2017 Plans: The I&T IPT will continue to plan and execute the two scheduled Live Fire Test Events and conduct follow-on NIFC-CA battlespace assessments for AEGIS Baseline 9 and SM-6 BLK I. Continue planning and conduct associated tracking events, modeling and simulation analysis, including execution of a live fire events in 2Q17 and 3Q17. Continue to support integration of the NIFC-CA and SM-6 capability into a AEGIS Advanced Capability Build (ACB) ACB-16 configuration, for land based NIFC-CA testing at WSMR Desert Ship Combat					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	**Project (Number/Name)** 3159 / *Naval Integrated Fire Control-Counter Air SE&I*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
System and associated range facilities. FY17 began the development, installation and checkout of the NIFC-CA 2019 configuration using ACB 16 and the SM-6 BlK 1A missile. The NIFC-CA 2019 configuration Live Fire test will provide critical risk reduction data prior to Live Fire Testing At-Sea in the following years. ***FY 2018 Base Plans:*** The I&T IPT will continue to plan and execute the one scheduled Live Fire Test Event and conduct follow-on NIFC-CA battlespace assessments for AEGIS Baseline 9 and SM-6 BLK I. One Live Fire Event scheduled for FY18. Complete WSMR Desert Ship Upgrades. Plan and execute WSMR ACB-16 / SM-6 Blk IA Live Fire Event. Plan for ACB-20 improvements for NIFC-CA. ***FY 2018 OCO Plans:*** N/A					
Title: Engineering Management And System Definition	13.545	15.222	15.125	0.000	15.125
Articles:	-	-	-	-	-
Description: Engineering management and system definition including the development of the Systems Performance Document (SPD), SoS functional allocations, requirements, traceability, SoS trades studies, SoS information exchange requirements, interface specifications, and sensor network capability analysis. Provides for complete FTS kill chain performance analysis and interface verification through development of a federation of simulations provided directly from the FTS Programs of Record. Program Of record consists of the E-2D Advanced Hawkeye, CEC, AEGIS, and SM-6 missile. Federated SoS simulations support architecture development, scenario development, predictive analysis for testing, and define capabilities and limitations of FTS kill chain performance analysis and interface verification through development of a federation of simulations provided directly from the FTS Programs of Record. Federated SoS simulations support architecture development, scenario development, predictive analysis for testing, and define capabilities and limitations of FTS kill chain for deployment. ***FY 2016 Accomplishments:*** Continued the integration of Pillar program models into the NIFC-CA Federation to support pre-mission and post-mission analysis of the two successful NIFC-CA Live Fire events in 4th QTR 2016. Continued to ensure Measure of Effectiveness (MOEs) and Measure of Performance (MOPs) were validated in the test plans and test scenarios. Validated the design, development, installation, and check out schedule for the NIFC-CA 2019 configuration Live Fire at WSMR was on track, while concurrently supporting test efforts in FY16. These 2					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	**Project (Number/Name)** 3159 / *Naval Integrated Fire Control-Counter Air SE&I*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Live Fire Test supported the AEGIS ACB-16 configuration and SM-6 BLK IA live fire tests and demonstrated improved FTS capability. ***FY 2017 Plans:*** Two Live Fire Event scheduled for FY17. Significant system engineering efforts are required to upgrade WSMR Desert Ship complex to an AEGIS ACB 16 baseline. FY17 begins the design, development, installation, and check out schedule for the NIFC-CA 2019 configuration Live Fire at White Sands Missile Range while concurrently supporting test efforts. Continue the integration of Pillar program models into the NIFC-CA Federation to support pre-mission and post-mission analysis for the planned NIFC-CA live fire event in 3QTR FY17. Continue to ensure MOEs and MOPs are validated in test plans and in more stressing test scenarios. ***FY 2018 Base Plans:*** Complete WSMR Desert Ship Upgrades to a AEGIS ACB 16 baseline. Significant system engineering efforts are required to upgrade WSMR Desert Ship complex to an AEGIS ACB 16 baseline. This will support the AEGIS ACB-16 configuration and SM-6 BLK IA live fire test and will demonstrate improved FTS capability. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	22.960	25.750	25.445	0.000	25.445

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 0604366N: *Standard Missile SM-6*	2.016	2.215	6.191	-	6.191	0.336	0.319	0.301	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

Not Applicable

E. Performance Metrics

Test Program and analysis conducted using the NIFC-CA Federation will provide data to verify NIFC-CA performance with respect to NIFC-CA MOEs, MOPs, and requirements being tracked as NIFC-CA related in the Pillar Programs. NIFC-CA Federation, once validated using test event data, will be used to update the expected performance of NIFC-CA, as required, and provide feedback to Pillar programs.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	Project (Number/Name) 3159 / *Naval Integrated Fire Control-Counter Air SE&I*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	Various	Various : Various	41.458	2.536	Feb 2016	2.998	Dec 2016	2.791	Dec 2017	-		2.791	0.000	49.783	-
Systems Engineering	C/CPFF	JHU/APL : Laurel, MD	2.665	0.515	May 2016	0.525	Dec 2016	0.640	Dec 2017	-		0.640	0.000	4.345	-
Systems Engineering	C/CPFF	NGIS : Melbourne, FL	8.011	0.190	May 2016	0.214	Oct 2016	0.238	Oct 2017	-		0.238	0.000	8.653	-
Systems Engineering	C/CPFF	LM MS2 : Moorestown, NJ	16.749	10.748	Feb 2016	11.829	Dec 2016	11.810	Dec 2017	-		11.810	0.000	51.136	-
Systems Engineering	C/CPFF	Raytheon Co. : Tucson, AZ	13.069	0.523	May 2016	0.545	Oct 2016	0.605	Oct 2017	-		0.605	0.000	14.742	-
Systems Engineering	WR	COTF : Norfolk, VA	0.785	0.000		0.000		0.000		-		0.000	0.000	0.785	-
		Subtotal	82.737	14.512		16.111		16.084		-		16.084	0.000	129.444	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integration and Test	C/CPFF	Raytheon : Tucson, AZ	7.302	0.090	May 2016	0.093	Dec 2016	0.095	Dec 2017	-		0.095	0.000	7.580	-
Integration and Test	WR	COTF : Norfolk, VA	0.013	0.000		0.000		0.000		-		0.000	0.000	0.013	-
Integration and Test	C/BA	Wallops Island : Wallops Island, VA	0.247	0.000		0.000		0.000		-		0.000	0.000	0.247	-
Integration and Test	WR	NAWC AD : Pax River, MD	0.250	0.000		0.000		0.000		-		0.000	0.000	0.250	-
Integration and Test	C/CPFF	Lockheed Martin - Moorestown, NJ : Moorestown, NJ	17.089	2.192	Oct 2015	2.842	Dec 2016	2.480	Dec 2017	-		2.480	Continuing	Continuing	Continuing
Integration and Test	WR	PT MUGU : PT Mugu, CA	5.599	0.598	May 2016	0.612	Oct 2016	0.750	Oct 2017	-		0.750	0.000	7.559	-
Integration and Test	Various	Various : Various	30.352	4.506	May 2016	4.984	Feb 2017	4.908	Dec 2017	-		4.908	Continuing	Continuing	Continuing
Integration and Test	MIPR	Dept of Interior : Boise, ID	1.940	0.190	May 2016	0.210	Jan 2017	0.238	Dec 2017	-		0.238	0.000	2.578	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	Project (Number/Name) 3159 / *Naval Integrated Fire Control-Counter Air SE&I*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integration and Test	WR	NSWC/PHD : Port Hueneme, CA	3.123	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	65.915	7.576		8.741		8.471		-		8.471	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Planning and Management	C/CPFF	Various : Various	17.747	0.872	Jan 2016	0.898	Feb 2017	0.890	Dec 2017	-		0.890	Continuing	Continuing	Continuing
		Subtotal	17.747	0.872		0.898		0.890		-		0.890	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	166.399	22.960		25.750		25.445		-		25.445	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	**Project (Number/Name)** 3159 / *Naval Integrated Fire Control-Counter Air SE&I*

NIFC-CA
FTS Planning Schedule

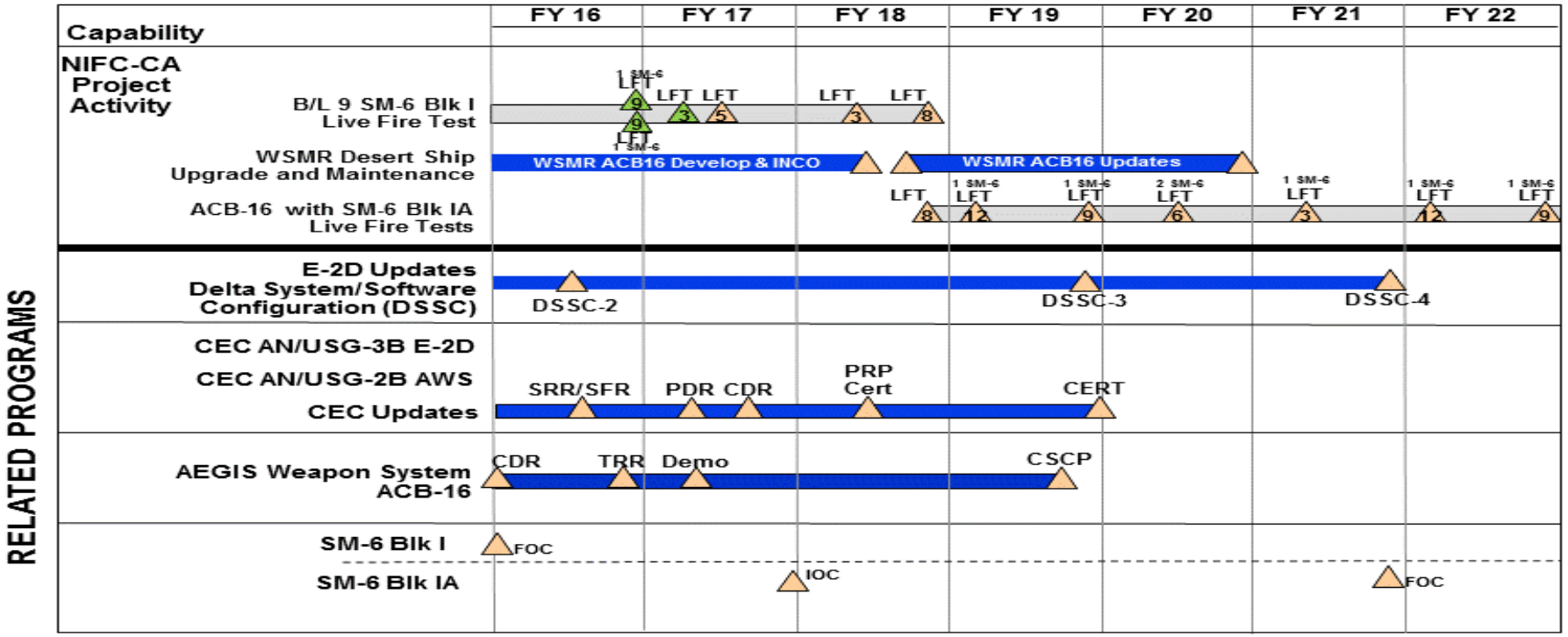


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	**Project (Number/Name)** 3159 / *Naval Integrated Fire Control-Counter Air SE&I*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3159				
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 16-2 (COMPLETED)	4	2016	4	2016
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 16-3 (COMPLETED)	4	2016	4	2016
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 17-1 (COMPLETED)	2	2017	2	2017
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 17-2	3	2017	3	2017
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 18-1	2	2018	2	2018
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 18-2	4	2018	4	2018
WSMR DESERT SHIP UPGRADE AND MAINTENANCE (ACB 16 DEVELOP & INCO)	1	2016	2	2018
WSMR DESERT SHIP UPGRADE AND MAINTENANCE (ACB 16 UPGRADES)	3	2018	4	2020
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 18-1	4	2018	4	2018
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 19-1	1	2019	1	2019
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 19-2	4	2019	4	2019
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 20-1	2	2020	2	2020
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 21-1	1	2021	1	2021
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 22-1	1	2022	1	2022
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 22-2	4	2022	4	2022
E-2D UPDATES DELTA SYSTEM SOFTWARE CONFIGURATION (DSSC-2)	3	2016	3	2016
E-2D UPDATES DELTA SYSTEM SOFTWARE CONFIGURATION (DSSC-3)	4	2019	4	2019
E-2D UPDATES DELTA SYSTEM SOFTWARE CONFIGURATION (DSSC-4)	4	2021	4	2021
CEC UPDATES SRR/SFR	3	2016	3	2016
CEC UPDATES PDR	2	2017	2	2017
CEC UPDATES CDR	3	2017	3	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	**Project (Number/Name)** 3159 / *Naval Integrated Fire Control-Counter Air SE&I*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CEC UPDATES PRP CERTIFICATION	3	2018	3	2018
CEC UPDATES CERTIFICATION	4	2019	4	2019
AEGIS WEAPON SYSTEM ACB 16 CDR	1	2016	1	2016
AEGIS WEAPON SYSTEM ACB 16 TRR	4	2016	4	2016
AEGIS WEAPON SYSTEM ACB 16 DEMO	2	2017	2	2017
AEGIS WEAPON SYSTEM ACB 16 COMBAT SYTEM CERTIFICATION PANEL (CSCP)	3	2019	3	2019
SM-6 BLK 1 FOC	1	2016	1	2016
SM-6 BLK 1A IOC	4	2017	4	2017
SM-6 Blk IA: FOC	4	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604404N *I (U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	424.806	414.376	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	839.182
3278: *MQ-25 Development*	424.806	114.376	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	539.182
9999: *Congressional Adds*	0.000	300.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	300.000
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** P462												

A. Mission Description and Budget Item Justification

The Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) system will enhance carrier capability and versatility for the Joint Forces Commander through integration of a persistent and mission flexible unmanned aircraft into the Carrier Air Wing. The UCLASS Initial Capabilities Document (ICD) highlights the need for a persistent, survivable carrier-based Intelligence, Surveillance, Reconnaissance, & Targeting (ISR&T) and precision strike asset. The Department continues to assess the UCLASS program and is conducting a Strategic Portfolio Review (SPR) of Department of Defense airborne ISR&T systems and the future composition of the carrier air wing. The current funding profile reflects a rephase to the program while the SPR is conducted. The Joint Requirements Oversight Council (JROC) endorsed the UCLASS ICD in April 2011 and formally approved it on 9 Jun 11 via Joint Requirements Oversight Council Memorandum (JROCM) 087-11. In support of affordability and adaptability directives, JROCMs 086-12 and 196-12 redefined the scope of JROCM 087-11 and affirmed the urgency for a platform that supports missions ranging from permissive counter-terrorism operations, to missions in low-end contested environments, to providing enabling capabilities for high-end denied operations, as well as supporting organic Naval missions. PB-17 reflected a restructure of the UCLASS program and transferred funding associated with PE 0604404N. As a result, remaining funding in PE 0604404N in the FYDP was transferred to PE 0605414N for the creation of the Unmanned Carrier Aviation (UCA)/MQ-25 Stingray program.

In FY16, the UCLASS program will execute source selection preparation and competitive air vehicle risk reduction activities that will transition to the UCA/MQ-25 Stingray program activities.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604404N *I (U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	434.699	0.000	0.000	-	0.000
Current President's Budget	414.376	0.000	0.000	-	0.000
Total Adjustments	-20.323	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-9.999	0.000			
• SBIR/STTR Transfer	-10.324	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2016	FY 2017
Project: 9999: *Congressional Adds*		
Congressional Add: *Competitive Air Vehicle*	250.000	0.000
Congressional Add: *Government and Industry Source Selection*	50.000	0.000
Congressional Add Subtotals for Project: 9999	300.000	0.000
Congressional Add Totals for all Projects	300.000	0.000

Change Summary Explanation

Schedule and Budget: Not Applicable

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	Project (Number/Name) 3278 / *MQ-25 Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3278: *MQ-25 Development*	424.806	114.376	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	539.182
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: P462

A. Mission Description and Budget Item Justification

The Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) system will enhance carrier capability and versatility for the Joint Forces Commander through integration of a persistent and mission flexible unmanned aircraft into the Carrier Air Wing. The UCLASS Initial Capabilities Document (ICD) highlights the need for a persistent, survivable carrier-based Intelligence, Surveillance, Reconnaissance, & Targeting (ISR&T) and precision strike asset. The Department assessed the UCLASS program and conducted a Strategic Portfolio Review (SPR) of Department of Defense airborne ISR&T systems and the future composition of the carrier air wing. The current funding profile reflects a rephase to the program. The Joint Requirements Oversight Council (JROC) endorsed the UCLASS ICD in April 2011 and formally approved it on 9 Jun 11 via Joint Requirements Oversight Council Memorandum (JROCM) 087-11. The PB-17 budget reflected the restructure of the UCLASS program and transferred funding associated with PE 0604404N. As a result, remaining funding in PE 0604404N in the FYDP was transferred to PE 0605414N for the creation of the Unmanned Carrier Aviation (UCA)/MQ-25 Stingray program.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Air Segment Product Development	7.147	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Air Segment Product Development efforts include, but are not limited to, design, development, integration, fabrication, test and training to deliver a carrier-suitable, semi-autonomous, unmanned vehicle capable of sustained Intelligence, Surveillance, Reconnaissance, & Targeting (ISR&T) operations and strike capability. A prime contractor, selected following a limited source competition, will deliver the Air Segment products.					
FY 2016 Accomplishments: Continue Preliminary Design Review contracts. Prepare draft Request for Proposal (RFP) for the Air Segment contract. Continue Air Segment system integration and interface activities.					
FY 2017 Plans: N/A					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	**Project (Number/Name)** 3278 / *MQ-25 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 OCO Plans:*** N/A					
Title: Control System & Connectivity (CS&C) Segment Product Development ***Articles:*** ***Description:*** CS&C Segment Product Development is a Government-led effort which includes, but is not limited to, the hardware, software and networks needed to establish interfaces and upgrades to existing ship and land-based command and control systems. Specifically, ISR&T, Tasking, Collection, Processing, Exploitation, and Dissemination systems will be utilized. ***FY 2016 Accomplishments:*** Continue CS&C hardware/software development and integration. Continue development and fabrication of prototype CPS/CDS based control stations, to include the test-transportable control station and test-ashore control station, in order to meet timelines required to support integration and flight test. Continue verification/validation activities of CS&C software requirements and documentation in Government integration lab for land-based and CVN-based control stations. Continue development of test-transportable control station. Conduct control station requirements verification/validation activities in Government integration lab. Continue integration of ADNS hardware/software components. Continue integration testing between control station with shipboard networks and data links. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	40.436 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: Carrier (CVN) Segment Product Development ***Articles:*** ***Description:*** CVN Segment Product Development is a Government-led effort which includes, but is not limited to, upgrades to existing CVN infrastructure to support UCLASS capabilities.	30.670 -	0.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	**Project (Number/Name)** 3278 / *MQ-25 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Continue ship installation activities and upgrades to existing Carrier (CVN) infrastructure, especially critical CVN suitable technologies and mission essential equipment. Continue engineering efforts in support of implementing SCDs and ECPs to modify CVNs for UCLASS hardware and software. Continue CVN ship integration activities and development of Concept of Operations in accordance with Naval Sea Systems Command, Space and Naval Warfare Systems Command, Program Executive Office, Aircraft Carriers, Commander Naval Air Forces, and Office of the Chief of Naval Operations processes. Continue development of UCLASS modifications to existing PoR shipboard systems needed to support the UCLASS capability to include required hardware for shipboard test and integration activities. Continue development of NMP supporting shipboard Configuration Management and Logistics. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Lead Systems Integration (LSI) Product Development ***Articles:*** ***Description:*** The LSI task is a Government-led effort including, but not limited to, advanced development, architecture development, interface definition, integration, system level test and evaluation, science and technology investments, roadmap refinement, and coordination of all UCLASS capabilities across system segments and stakeholders. ***FY 2016 Accomplishments:*** Continue Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) efforts to implement an open system architecture across all UCLASS segments. Continue enterprise design and integration activities. Continue Air Segment, Control System & Connectivity Segment, and Carrier Segment interface activities. Continue development of enterprise UCLASS CONEMPS. Continue stand up of system integration laboratories	21.012 -	0.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	**Project (Number/Name)** 3278 / *MQ-25 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and test facilities in support of government-led program activities, including implementation of open system architectures. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Support	5.173	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Efforts include studies, analyses and training development support. ***FY 2016 Accomplishments:*** Continue logistics supportability studies and analyses, modeling and simulation, support of Manned Flight Simulation efforts, development of training tools for the Fleet, and development of manpower and training assessments. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Test and Evaluation	4.134	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	**Project (Number/Name)** 3278 / *MQ-25 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue test plans for surrogates. Oversee development and implementation of test facility, range and lab test requirements. Support engineering events and program management activities. Support developmental test for CS&C and CVN segments. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Management ***Articles:*** ***Description:*** Efforts include program, engineering, test, and logistics management. ***FY 2016 Accomplishments:*** Continue oversight, coordination, and management of UCLASS acquisition, system interface and integration activities. Provide oversight of UCLASS contract activities, including source selection for the Air System contract. Continue logistics management tasks. Continue to maintain security and program office environments. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	5.804 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	114.376	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	**Project (Number/Name)** 3278 / *MQ-25 Development*

D. Acquisition Strategy

The Government is the Lead Systems Integration (LSI) across all Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) segments, including Air Segment, Control System & Connectivity (CS&C) Segment, and Carrier (CVN) Segment and external enterprise stakeholders. The UCLASS Program will leverage existing Navy information dissemination and Department infrastructures, as the government-led system of systems integration is accomplished across all segments and external enterprise stakeholders. The Government will manage the system level architecture and interfaces, and foster efficient data exchanges and integration. Specifically, the CS&C and CVN segments will be organically managed by the Government LSI and will modify existing systems via the affected system's Engineering Change Proposal and configuration management processes. These integration tasks include successful demonstration of integration with the CVN landing system, integration of control system, and integration with the Tasking, Collecting, Processing, Exploitation, Dissemination interfaces to include successful transmission of mission system data. The Government will develop and award contracts as required to support program activities, including a contract for the Air System. The Government's acquisition strategy was approved on 7 Jun 13. Acquisition and contracting strategies comply with current statutes, regulations, and instructions.

E. Performance Metrics

Meet Navy operational requirements as defined in requirements documents.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	Project (Number/Name) 3278 / *MQ-25 Development*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Air Segment (Primary Hardware Development)	SS/FFP	Boeing : St. Louis, MO	19.086	0.000		0.000		0.000		-		0.000	0.000	19.086	19.086
Air Segment (Primary Hardware Development)	SS/FFP	General Atomics : Poway, CA	19.939	0.000		0.000		0.000		-		0.000	0.000	19.939	19.939
Air Segment (Primary Hardware Development)	SS/FFP	Lockheed Martin : Palmdale, CA	16.579	0.000		0.000		0.000		-		0.000	0.000	16.579	16.579
Air Segment (Primary Hardware Development)	SS/FFP	Northrop Grumman : El Segundo, CA	19.107	0.000		0.000		0.000		-		0.000	0.000	19.107	19.107
Air Segment - Systems Engineering	WR	NAWCAD : Patuxent River, MD	28.954	6.455	Dec 2015	0.000		0.000		-		0.000	0.000	35.409	-
Air Segment - Systems Engineering	Various	Various : Various	2.207	0.692	Dec 2015	0.000		0.000		-		0.000	0.000	2.899	-
CS&C Segment	WR	NAWCAD : Patuxent River, MD	46.648	11.502	Dec 2015	0.000		0.000		-		0.000	0.000	58.150	-
CS&C Segment	Various	Various : Various	20.158	2.747	Dec 2015	0.000		0.000		-		0.000	0.000	22.905	-
CS&C Segment	Various	NSMA : Arlington, VA	11.234	3.049	Dec 2015	0.000		0.000		-		0.000	0.000	14.283	-
CS&C Segment	WR	NAWCWD : China Lake, CA	12.983	0.000		0.000		0.000		-		0.000	0.000	12.983	-
CS&C Segment	WR	NAWCWD : Point Mugu, CA	15.007	0.354	Dec 2015	0.000		0.000		-		0.000	0.000	15.361	-
CS&C Segment	WR	SPAWAR : San Diego, CA	21.117	7.772	Dec 2015	0.000		0.000		-		0.000	0.000	28.889	-
CS&C Segment	C/CPFF	Raytheon : El Segundo, CA	21.823	0.000		0.000		0.000		-		0.000	0.000	21.823	21.823
CS&C Segment (Comms, Network, Intel)	Various	Various : Various	9.583	11.400	Dec 2015	0.000		0.000		-		0.000	0.000	20.983	-
CS&C Segment (CPS/ CDS)	Various	Various : Various	4.468	3.612	Jul 2016	0.000		0.000		-		0.000	0.000	8.080	-
Carrier Segment (Ship Integration)	Various	Various : Various	12.207	4.518	Dec 2015	0.000		0.000		-		0.000	0.000	16.725	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	Project (Number/Name) 3278 / *MQ-25 Development*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Carrier Segment (Ship Integration)	WR	NAWCAD : Patuxent River, MD	38.370	23.363	Dec 2015	0.000		0.000		-		0.000	0.000	61.733	-
Carrier Segment (Ship Integration)	WR	NAWCAD : Lakehurst, NJ	0.750	1.800	Dec 2015	0.000		0.000		-		0.000	0.000	2.550	-
Carrier Segment	WR	SPAWAR : San Diego, CA	0.968	0.989	Dec 2015	0.000		0.000		-		0.000	0.000	1.957	-
LSI-Advanced Development (Primary Hardware Development)	Various	Various : Various	13.064	0.515	Dec 2015	0.000		0.000		-		0.000	0.000	13.579	-
LSI- Advanced Development (Primary Hardware Development)	WR	NAWCAD : Patuxent River, MD	6.508	1.160	Dec 2015	0.000		0.000		-		0.000	0.000	7.668	-
LSI-Advanced Development (Primary Hardware Development)	WR	NAWCWD : China Lake, CA	8.128	1.065	Dec 2015	0.000		0.000		-		0.000	0.000	9.193	-
LSI - Systems Engineering	Various	Various : Various	7.048	4.477	Dec 2015	0.000		0.000		-		0.000	0.000	11.525	-
LSI - Systems Engineering	WR	NAWCAD : Patuxent River, MD	16.466	13.795	Dec 2015	0.000		0.000		-		0.000	0.000	30.261	-
Prior year Prod Dev costs no longer funded in the FYDP	Various	Various : Various	17.424	0.000		0.000		0.000		-		0.000	0.000	17.424	-
		Subtotal	389.826	99.265		0.000		0.000		-		0.000	0.000	489.091	-

Remarks

Control System and Connectivity (CS&C) Segment
Navy Systems Management Activity (NSMA)
Common Display System (CDS)
Advanced Development (AD)
Common Processing System (CPS)
Lead Systems Integration (LSI)
Note: UCLASS PE 0604404N ends in FY16

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	Project (Number/Name) 3278 / *MQ-25 Development*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Manpower Studies & Analyses	Various	Various : Various	0.067	0.095	Jan 2016	0.000		0.000		-		0.000	0.000	0.162	-
Training Development	Various	Various : Various	1.408	5.078	Dec 2015	0.000		0.000		-		0.000	0.000	6.486	-
		Subtotal	1.475	5.173		0.000		0.000		-		0.000	0.000	6.648	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	WR	NAWCAD : Patuxent River, MD	7.699	4.100	Dec 2015	0.000		0.000		-		0.000	0.000	11.799	-
Test and Evaluation	Various	Various : Various	0.022	0.034	Jan 2016	0.000		0.000		-		0.000	0.000	0.056	-
		Subtotal	7.721	4.134		0.000		0.000		-		0.000	0.000	11.855	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management	Various	Various : Various	5.459	1.967	Dec 2015	0.000		0.000		-		0.000	0.000	7.426	-
Management	WR	NAWCAD : Patuxent River, MD	20.109	3.790	Dec 2015	0.000		0.000		-		0.000	0.000	23.899	-
Management (Travel)	Various	NAVAIR : Patuxent River, MD	0.216	0.047	Oct 2015	0.000		0.000		-		0.000	0.000	0.263	-
		Subtotal	25.784	5.804		0.000		0.000		-		0.000	0.000	31.588	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	424.806	114.376		0.000		0.000		-		0.000	0.000	539.182	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	**Project (Number/Name)** 3278 / *MQ-25 Development*

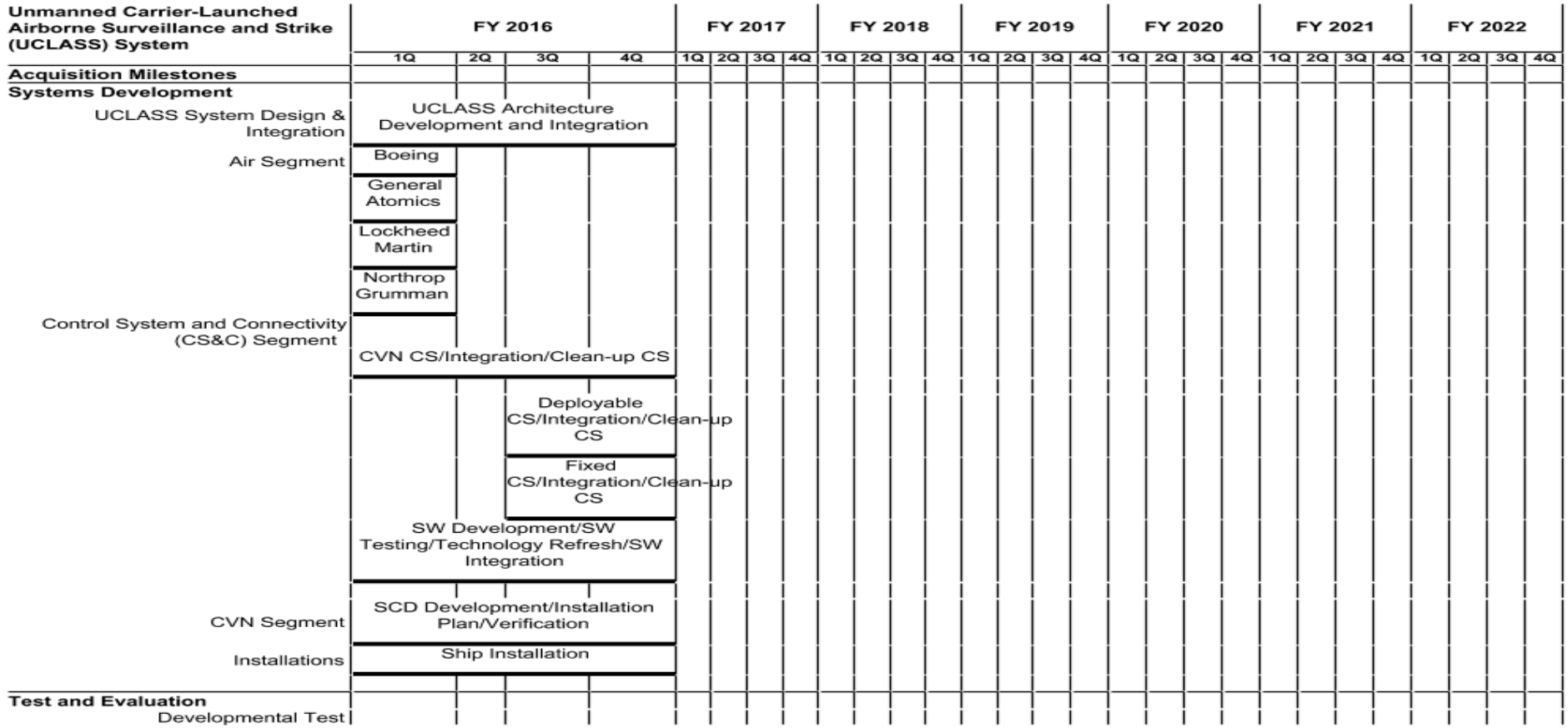

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	**Project (Number/Name)** 3278 / *MQ-25 Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) System				
Systems Development: UCLASS System Design & Integration: UCLASS Architecture Development and Integration	1	2016	4	2016
Systems Development: Air Segment: Boeing	1	2016	1	2016
Systems Development: Air Segment: General Atomics	1	2016	1	2016
Systems Development: Air Segment: Lockheed Martin	1	2016	1	2016
Systems Development: Air Segment: Northrop Grumman	1	2016	1	2016
Systems Development: Carrier Vessel Nuclear (CVN) Control Station (CS)/Integration/ Clean-up CS	1	2016	4	2016
Systems Development: Deployable CS/Integration/Clean-up CS	3	2016	4	2016
Systems Development: Fixed CS/Integration/Clean-up CS	3	2016	4	2016
Systems Development: Software (SW) Development/SW Testing/Technology Refresh/ SW Integration	1	2016	4	2016
Systems Development: CVN Segment: Ship Change Document (SCD) Development/ Installation Plan/Verification	1	2016	4	2016
Systems Development: Installations: Ship Installation	1	2016	4	2016

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604404N / *(U)Unman Carrier Launch A/B Surv & Strk(UCLASS)Sys*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	300.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	300.000
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding provided in support of competitive air vehicle risk reduction activities to include government and industry source selection preparation.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017
Congressional Add: Competitive Air Vehicle ***FY 2016 Accomplishments:*** Effort includes Competitive air vehicle risk reduction activities. ***FY 2017 Plans:*** N/A	250.000	0.000
Congressional Add: Government and Industry Source Selection ***FY 2016 Accomplishments:*** Effort includes government and industry source selection preparation. ***FY 2017 Plans:*** N/A	50.000	0.000
Congressional Adds Subtotals	300.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Funding provided in support of competitive air vehicle risk reduction activities to include government and industry source selection preparation.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604501N *I Advanced Above Water Sensors*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	250.389	42.796	85.868	87.233	-	87.233	41.722	13.780	14.912	15.164	Continuing	Continuing
3188: *Dual-Band Radar*	90.878	10.041	4.808	5.165	-	5.165	0.000	0.000	0.000	0.000	0.000	110.892
3232: *Multi-Mission Signal Processor*	144.748	11.584	2.279	2.442	-	2.442	2.530	2.070	3.070	3.134	Continuing	Continuing
3236: *Advanced Radar Technology*	0.589	20.397	68.037	68.665	-	68.665	28.041	0.000	0.000	0.000	0.000	185.729
3301: *Improved Capabilities SPY-1 Radar*	14.174	0.774	10.744	10.961	-	10.961	11.151	11.710	11.842	12.030	Continuing	Continuing

A. Mission Description and Budget Item Justification

Dual Band Radar (DBR) Upgrades: Funding is for Dual Band Radar (DBR) System upgrades to implement cost savings initiatives for Volume Search Radar (VSR) modifications, supportability analysis and associated logistics product updates; future upgrades/technology insertion efforts for Multi-Function Radar (MFR)/VSR as a part of the DBR suite on CVN 78 and the MFR on DDG 1000 Class ships. Funding is also required to resolve the hardware and software issues discovered during the various test events to include: DTB2-411, Self Defense Test Ship (SDTS) testing, Land Based Testing and pertinent At-Sea test events. The upgrades will include all aspects of the radar system/subsystems, including hardware and software. Specific subsystem areas include the Array, Transmit/Receive (T/R) module, Receiver/ Exciter, Signal Data Processor, Radome, and power/cooling systems. Upgrades and technology insertions are required to maintain the level of force protection needed for ship defense against all threats envisioned in the littoral environment. The supportability analysis and logistic products associated with these upgrades will also be developed and updated. DBR CVN 78 Testing and Certification: FY17-FY18 requirement supports DBR At-Sea Test and Evaluation (T&E), Environmental Testing and DBR Systems Certification for CVN 78.

Multi-Mission Signal Processor (MMSP): The development of MMSP provides simultaneous Anti-Air Warfare (AAW)/Ballistic Missile Defense (BMD) multi-mission capability for DDG 51 class ships as part of the Aegis Modernization Program. This capability is utilized for DDG 113 and follow new construction and Aegis Ashore. Modifies SPY-1D transmitters to enable dual beam for reduced frame times and better reaction time, provides stability for all D(V) waveforms, and avoids operational degradation. The SPY-1 radar system detects, tracks, and supports engagements of a broader range of threats. MMSP improves performance in littoral, ducted clutter, electronic attack (EA), and chaff environments and provides greater commonality in computer programs and equipment. This effort also provides for the development of a Solid State Switch Assembly (SSSA) through an ONR/MANTECH project, MMSP on Destroyers Commercial Off The Shelf (COTS) refresh, MMSP technology refresh, radar capability upgrades, reliability improvements, and Ship-Based Non-Cooperative Target Recognition (SBNCTR). Initiate transition of Advanced Calibration Experiment (ACE) into Baseline (BL) 7.2. MMSP development includes the commencement of technology refresh to support Aegis Modernization due to Diminishing Manufacturing Sources and Material Shortages (DMSMS) and obsolescence issues. MMSP technology refresh includes the MMSP-Refresh (MMSP-R) beginning in FY16. MMSP-R includes software updates required on new computer platforms. Engineering efforts will be required to assess alternate technologies and determine optimal MMSP architectural solutions, which will include system security requirements. FY18 concludes MMSP on Destroyers Commercial Off the Shelf (COTS) Refresh Engineering Change Proposals (ECPs), includes support for MMSP-R radar Integration & Test (I&T) and Aegis Capability Build (ACB) 16 Phase 0 certification.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604501N *I Advanced Above Water Sensors*

Advanced Radar Technology (ART): Funds the development and integration of existing and new radar technologies into the Navy's sensors to enhance performance and/or ensure sensor operations and sustainment throughout the lifecycle of the sensor and platforms on which installed.

Enterprise Air Surveillance Radar (EASR): EASR will modify an existing radar technology to meet the air surveillance requirements for multiple ship classes. EASR will be one sensor in a suite that is designed to meet the performance needs for ship self-defense, situational awareness and air traffic control. EASR will replace the Volume Search Radar (VSR) in the CVN 78 Class Dual Band Radar system and the AN/SPS-48/49 radar systems in numerous ship classes. The AN/SPS-48 Radars are long-range, three-dimensional (3-D) radars used to search, detect and provide space-stabilized, three-coordinate (range, bearing, height) data for air intercept control and designation to a weapon system. The AN/SPS-49A(V)1 radar system is a long range, two dimensional (2-D), L-Band air surveillance radar installed on USN major combatants. The AN/SPY-4 Volume Search Radar (VSR) is an S-Band active phased array radar deployed on CVN 78 providing volume surveillance and air traffic control. EASR funding will develop a modern 3-D air search radar that addresses the latest requirements for Aviation and Amphibious Warfare Ships and closely conforms to existing combat system interfaces, as well as aligns with existing shipboard space, weight, and power limits. The architecture and acquisition strategy for EASR is intended to drive a lower recurring cost by utilizing the same core technology for both fixed-face and rotating array variants. EASR will provide for engineering of component and system level technology improvements for equipment used by in-service air search radars.

Enterprise X-Band Illuminator (EXI): EXI funding will develop an X-band illuminator transmitter modification compatible with the EASR radar and Combat System suite for CVN and Amphibious ship classes.

Improved Capabilities for SPY-1 Radar: These Reliability, Maintainability, and Availability (RM&A) improvements and solid state technology insertions are intended to reduce cascading failures, mitigate obsolescence issues, and improve reliability in support of Anti-Air Warfare (AAW) and Ballistic Missile Defense (BMD) missions while still providing AN/SPY-1 Radar Total Ownership Cost Reductions. Improvements such as Solid State Insertion will yield reductions in annual fleet maintenance costs and is a top fleet requirement as part of the AEGIS Wholeness initiative. In addition to RM&A improvements, warfighting improvements funded in this line include: Transmitter Noise Cancellation (TNC) development will include hardware/software to counter low radar cross section, low altitude threats. Side Lobe Blanking (SLB) addresses shortfalls in mixed electronic attack environment while in an Integrated Air and Missile Defense (IAMD) mode. The Ship-Based Non-Cooperative Target Recognition (SBNCTR) program will develop algorithms to provide classification for targets. Transition of Advanced Calibration Experiment (ACE) from Baseline 7 into Baseline 9. Electronic Attack (EA) and Rapid Radar Capability Improvement Program (R2CIP) develop solutions for evolving EA threats. FY18 includes the continuation of development for ACE Phase 1, SBNCTR Phase 2, TNC, EA improvements, and 10KW Amp/Cross Field Amplifier (CFA) Solid State Gallium Nitride (GaN).

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			**R-1 Program Element (Number/Name)** PE 0604501N *I Advanced Above Water Sensors*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	43.914	85.868	88.249	-	88.249
Current President's Budget	42.796	85.868	87.233	-	87.233
Total Adjustments	-1.118	0.000	-1.016	-	-1.016
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.118	0.000			
• Program Adjustments	0.000	0.000	-1.676	-	-1.676
• Rate/Misc Adjustments	0.000	0.000	0.660	-	0.660

Change Summary Explanation

FY16: FY16 decrease is primarily due to Small Business Innovative Research (SBIR) reductions.

FY18: FY18 decrease is due to reductions for SPY-1 Improvements.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604501N / *Advanced Above Water Sensors*	Project (Number/Name) 3188 / *Dual-Band Radar*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3188: *Dual-Band Radar*	90.878	10.041	4.808	5.165	-	5.165	0.000	0.000	0.000	0.000	0.000	110.892
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Dual-Band Radar (DBR) Upgrades: Funding is for Dual Band Radar (DBR) System upgrades to implement cost savings initiatives for Volume Search Radar (VSR) modifications, supportability analysis and associated logistics product updates; future upgrades/technology insertion efforts for Multi-Function Radar (MFR)/VSR as a part of the DBR suite on CVN 78 Class ships and the MFR on DDG 1000 Class ships. Funding is also required to resolve the hardware and software issues discovered during the various test events to include: DTB2-411, SDTS testing, Land Based Testing and pertinent At-Sea test events. The upgrades will include all aspects of the radar system/subsystems, including hardware and software. Specific subsystem areas include the Array, Transmit/Receive (T/R) module, Receiver/Exciter, Signal Data Processor, Radome, and power/cooling systems. Upgrades and technology insertions are required to maintain the level of force protection needed for ship defense against all threats envisioned in the littoral environment. The supportability analysis and logistic products associated with these upgrades will also be developed and updated.

DBR CVN 78 Testing and Certification: FY17-FY18 requirement supports DBR At-Sea Test and Evaluation (T&E), Environmental Testing and DBR Systems Certification for CVN 78.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: RADAR UPGRADES TECHNOLOGY INSERTION	9.576	2.927	2.994	0.000	2.994
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Continued Technology Insertion for the MFR/VSR/DBR hardware and software and development/updates to associated logistics products. - Continued to provide technical support for DBR element certification in support of overall combat system certification. - Completed validation testing and integration of the DBR/Battle Force Tactical Trainer (BFTT) and DBR/ Cooperative Engagement Capability (CEC) software interface. - Continued validation testing and integration of DBR/Surface Electronic Warfare Improvement Program (SEWIP) software interfaces. - Continued planning for DBR Environmental Testing. - Continue DBR Pierside Shipboard Testing.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3188 / *Dual-Band Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Commenced systems engineering analysis and software modifications for DBR track management improvement (e.g., reduce environmental and false clutter tracks). Increase from PB17 planned value due primarily to: - DBR FY16 increase by $3.7M provided additional funding to the DBR prime contractor (Raytheon IDS) for DBR integration and test efforts at the Wallops Island Integration Test Center (WIETC), Wallops Island, VA. This testing included DBR element and combat system integration testing in support of CVN 78 and DDG 1000 shipbuilding programs. This funding was also used to resolve DBR Web-Based System Trouble Reports (WSTRs) that were identified during testing at WIETC. ***FY 2017 Plans:*** - Continue Technology Insertion for the MFR/VSR/DBR hardware and software and development/updates to associated logistics products. - Continue to provide technical support for DBR element certification in support of overall combat system certification. - Complete validation testing and integration of DBR/SEWIP software interfaces. - Continue planning for DBR Environmental Testing. - Complete DBR Pierside Shipboard Testing. - Commence DBR At-Sea Shipboard Testing. - Complete systems engineering analysis and software modifications for DBR track management improvement (e.g., reduce environmental and false clutter tracks). ***FY 2018 Base Plans:*** - Complete Technology Insertion for the MFR/VSR/DBR hardware and software and development/updates to associated logistics products. - Complete technical support for DBR element certification in support of overall combat system certification. - Complete planning for DBR Environmental Testing. - Complete DBR At-Sea Shipboard Testing. ***FY 2018 OCO Plans:*** N/A					
Title: RADAR UPGRADES GOVERNMENT ENGINEERING SERVICES	0.173	1.800	2.081	0.000	2.081
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3188 / *Dual-Band Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continued to provide Government Engineering Services support for radar upgrades and technology insertion of the MFR/ VSR/DBR radars. Continue to perform oversight and assessment of efforts associated with this phase of the program. - Completed Government Engineering Services support of DBR/BFTT and DBR/CEC software interface development integration. - Continued Government Engineering Services support of DBR/SEWIP software interface development integration. - Continued to provide Government Engineering Services required to complete DBR element certification to support overall combat system certification. - Completed Government Engineering Services to support validation testing and integration of the DBR/BFTT and DBR/CEC software interface. - Continued to provide Government Engineering Services to support validation testing and integration of the DBR/SEWIP software interfaces. - Continued Government Engineering Services support for DBR Electromagnetic Interference (EMI) Testing and Analysis efforts. - Continued planning for DBR Environmental Testing. - Continued DBR Pierside Shipboard Testing. Decrease from PB17 planned values due to reallocation to DBR prime contractor for DBR integration and test efforts at WIETC.					
FY 2017 Plans: - Continue to provide Government Engineering Services support for radar upgrades and technology insertion of the MFR/ VSR/DBR radars. Continue to perform oversight and assessment of efforts associated with this phase of the program. - Continue to provide Government Engineering Services required to complete DBR element certification to support overall combat system certification. - Complete Government Engineering Services to support validation testing and integration of the DBR/SEWIP software interface. - Continue Government Engineering Services support for DBR EMI Testing and Analysis efforts. - Continued planning for DBR Environmental Testing. - Continue DBR Pierside Shipboard Testing. - Commence DBR At-Sea Shipboard Testing.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3188 / *Dual-Band Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Increase from PB17 planned values primarily due to refined estimates for government engineering efforts relative to complexity of DBR pierside and at-sea testing planned in FY17. Plans support both CVN 78 and DDG 1000 shipbuilding program schedules. CVN78 ship activation schedule was extended from FY16 into FY17; planned scope updated with continued pierside activation and commencement of at-sea testing in FY17. ***FY 2018 Base Plans:*** - Complete Government Engineering Services support radars upgrades and technology insertion of the MFR/ VSR/DBR radars. Complete oversight and assessment of efforts associated with this phase of the program. - Complete Government Engineering Services support for DBR element certification in support of overall combat system certification. - Complete Government Engineering Services support for DBR EMI Testing and Analysis efforts. - Complete Government Engineering Services support for DBR Environmental Testing. - Complete Government Engineering Services support for DBR At-Sea Shipboard Testing. ***FY 2018 OCO Plans:*** N/A					
Title: RADAR UPGRADES PROGRAM MANAGEMENT	0.292	0.081	0.090	0.000	0.090
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Continued to provide Program Management and logistics support for radar upgrades and technology insertion for the MFR/ VSR/DBR radars. - Completed Program Management for validation testing and integration of the DBR/BFTT and DBR/CEC software interfaces. - Continued to provide Program Management for validation testing and integration of the DBR/SEWIP software interfaces. ***FY 2017 Plans:*** - Continue to provide Program Management and logistics support for radar upgrades and technology insertion for the MFR/ VSR/DBR radars. - Complete Program Management for validation testing and integration of the DBR/SEWIP software interface. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3188 / *Dual-Band Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Complete Program Management and logistics support for radars upgrades and technology insertion of the MFR/VSR/DBR radars. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	10.041	4.808	5.165	0.000	5.165

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2980: *BLI 2980/ OPN Items Less Than $5M*	8.922	17.634	16.422	-	16.422	16.332	16.553	16.872	17.251	Continuing	Continuing
• O&M,N/1C2C/0702228N: *0702228N/1C2C/O&M,N*	2.641	2.397	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	11.765
• O&M,N/1C1C/0702228N: *0702228N/1C1C/O&M,N*	0.000	0.000	2.623	-	2.623	2.683	2.736	2.793	2.852	Continuing	Continuing

Remarks

D. Acquisition Strategy

Radar Upgrades and logistic products will be developed to address lessons learned and technology refresh for DBR systems on multiple ship classes.

E. Performance Metrics

- Complete upgrade studies and analyses each fiscal year to determine efficiencies for Hardware (H/W) and Software (S/W) upgrades and to determine appropriate logistics product updates
- Complete co-site and off-ship EMI analysis testing
- Complete VSR Radome development and determine opportunities to improve configuration and performance
- Complete upgrade technology insertion
- Complete development of logistics products
- Implement supportability analysis to improve supportability and reduce overall lifecycle cost
- Complete DBR At-Sea Test and Evaluation (T&E)
- Complete planning for DBR Environmental Testing
- Complete DBR/CEC interface development
- Complete DBR Systems Certification

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3188 / *Dual-Band Radar*

- Complete Common Array Power System (CAPS) redesign
- Complete DBR/SEWIP interface development
- Complete DBR/BFTT interface development
- Complete DBR Shipboard Testing

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604501N / *Advanced Above Water Sensors*	Project (Number/Name) 3232 / *Multi-Mission Signal Processor*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3232: *Multi-Mission Signal Processor*	144.748	11.584	2.279	2.442	-	2.442	2.530	2.070	3.070	3.134	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Multi-Mission Signal Processor (MMSP): The development of MMSP provides simultaneous Anti-Air Warfare (AAW)/Ballistic Missile Defense (BMD) multi-mission capability for DDG 51 class ships as part of the Aegis Modernization Program. This capability is utilized for DDG 113 and follow new construction and Aegis Ashore. Modifies SPY-1D transmitters to enable dual beam for reduced frame times and better reaction time, provides stability for all D(V) waveforms, and avoids operational degradation. The SPY-1 radar system detects, tracks, and supports engagements of a broader range of threats. MMSP improves performance in littoral, ducted clutter, electronic attack (EA), and chaff environments and provides greater commonality in computer programs and equipment. This effort also provides for the development of a Solid State Switch Assembly (SSSA) through an ONR/MANTECH project, MMSP on Destroyers Commercial Off The Shelf (COTS) refresh, MMSP technology refresh, radar capability upgrades, reliability improvements, and Ship-Based Non-Cooperative Target Recognition (SBNCTR). Initiate transition of Advanced Calibration Experiment (ACE) into Baseline (BL) 7.2.

MMSP development includes the commencement of technology refresh to support Aegis Modernization due to Diminishing Manufacturing Sources and Material Shortages (DMSMS) and obsolescence issues. MMSP technology refresh includes the MMSP-Refresh (MMSP-R) beginning in FY16. MMSP-R includes software updates required on new computer platforms. Engineering efforts will be required to assess alternate technologies and determine optimal MMSP architectural solutions, which will include system security requirements. FY18 concludes MMSP on Destroyers COTS Refresh (ECPs), includes support for MMSP-R radar I&T and ACB16 Phase 0 certification.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: SYSTEMS ENGINEERING	11.584	2.279	2.442	0.000	2.442
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					
- Continued to support MMSP/ACB12 Radar Integration at-sea validation testing and computer program corrections.					
- Supported Final Certification of MMSP on Destroyers.					
- Completed ACE integration into BL 7.2.					
- Continued MMSP on Destroyers COTS Refresh and Radar Capability improvements.					
- Continued DDG BL 9 Radar Capabilities Upgrades, SBNCTR, and BL 9 Radar Synchronization.					
- Continued ACB16 Radar upgrades for MMSP.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3232 / *Multi-Mission Signal Processor*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continued to maintain alignment with the Ballistic Missile Defense Program and the associated Ballistic Missile. Defense Signal Processor (BSP) adjunct to incorporate BMD capability within MMSP during AEGIS Modernization. - Supported Production Readiness Review (PRR) of Solid State Switch Assembly (SSSA) and complete transition to production. - Initiated development of MMSP-R. Changes from PB17 due primarily to: - Realignment of funds to Dual Band Radar (3188) and FY16 Small Business Innovative Research (SBIR) reduction ($1.8M). Overall, minor impacts resulted in schedule/phasing adjustments for SBNCTR (canceled IPR #2) and ACE research and development activities. - FY 16 MMSP-R was initiated due to concept maturity and the opportunity to leverage FMS-funded development.					
FY 2017 Plans: - Continue MMSP-R development to support AEGIS Modernization due to Diminishing Manufacturing Sources and Material Shortages (DMSMS) and obsolescence issues. Engineering efforts will be required to assess alternate technologies and determine optimal MMSP architectural solutions, which will include System Security requirements. - Continue to maintain alignment with the Ballistic Missile Defense Program and the associated Ballistic Missile Defense Signal Processor (BSP) adjunct to incorporate BMD capability within MMSP during AEGIS Modernization. - Continue to support ACB12 and ACB16 MMSP improvements. - Initiate MMSP-R integration and test.					
FY 2018 Base Plans: - Continue to support MMSP-R to support AEGIS Modernization due to DMSMS and obsolescence issues. - Complete MMSP-R integration and test. - Complete MMSP on Destroyers COTS Refresh ECPs. - Complete support of ACB16 Phase 0 certification. - Commence support of MMSP-R ACB16 integration and test. - Continue to maintain alignment with the Ballistic Missile Defense Program and the associated Ballistic Missile Defense Signal Processor (BSP) adjunct to incorporate BMD capability within MMSP during AEGIS Modernization.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3232 / *Multi-Mission Signal Processor*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue to support ACB12 and ACB16 MMSP improvements. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	11.584	2.279	2.442	0.000	2.442

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN/2122: *BLI 2122/SCN DDG 51*	4,207.664	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	77,260.074
• OPN/0900: *BLI 0900/ OPN DDG Modernization*	421.195	432.766	603.355	-	603.355	456.218	605.847	582.863	714.483	3,365.248	9,021.982

Remarks

D. Acquisition Strategy

Multi-Mission Signal Processor (MMSP) provides simultaneous AAW/BMD Multi-mission capability for AEGIS Modernization Program and leverages BMD 4.0.1 and SPY-1D(V) designs. This MMSP development efforts support integration of BMD 5.0 signal processing, and will lead to the OPN/SCN procurement for shore sites and shipsets. This effort also provides for the development of a Solid State Switch Assembly (SSSA) through an ONR/MANTECH project, and will lead to OPN/SCN procurement for shore sites and shipsets. MMSP technology refresh, radar capability upgrades, reliability improvements, and ship-based Non-Cooperative Target Recognition will be incorporated into Baseline 9 and follow.

E. Performance Metrics

- Complete DDG SPY-1D(V) Engineering Exercise (EE) #2
- Complete DDG Qualification Testing
- Complete DDG ACB12 Multi-Mission Exercise (MMEX)
- Complete DDG Delivery
- Complete DDG Aegis Light Off (ALO)
- Complete DDG Combat System Ship Qualification Trials (CSSQT)
- Complete MMSP on DDG on Final Certification
- Complete DDG Commercial Off The Shelf (COTS) Refresh - Engineering Change Proposal (ECP) for MMSP on Destroyers
- Complete Solid State Switch Assembly (SSSA) contract award
- Complete SSSA Critical Design Review (CDR)
- Complete Ship-Based Non-Cooperative Target Recognition (SBNCTR) Engineering Exercise (EE)

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3232 / *Multi-Mission Signal Processor*

- Complete ACB16 Preliminary Design Review (PDR)
- Complete ACB16 Phase 0 certification
- Complete ACB16 Phase 1 certification
- Complete ACB16 Phase 2 certification
- Complete ACB16 COTS Refresh
- Complete SSSA qualification testing
- Complete SSSA Production Readiness Review (PRR)
- Complete SSSA transition to production
- Complete SBNCTR integration review
- Complete ACE BL 7.2 Demo
- Complete ACE BL 7.2 Certification
- Complete MMSP-R Radar integration and test
- Complete MMSP-R ACB16 integration and test
- Complete MMSP-R MMEX
- Complete MMSP-R Demo

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604501N / *Advanced Above Water Sensors*	Project (Number/Name) 3236 / *Advanced Radar Technology*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3236: *Advanced Radar Technology*	0.589	20.397	68.037	68.665	-	68.665	28.041	0.000	0.000	0.000	0.000	185.729
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Advanced Radar Technology (ART): Funds the development and integration of existing and new radar technologies into the Navy's sensors to enhance performance and/or ensure sensor operations and sustainment throughout the lifecycle of the sensor and platforms on which installed.

Enterprise Air Surveillance Radar (EASR): EASR will modify an existing radar technology to meet the air surveillance requirements for multiple ship classes. EASR will be one sensor in a suite that is designed to meet the performance needs for ship self-defense, situational awareness and air traffic control. EASR will replace the Volume Search Radar (VSR) in the CVN 78 Class Dual Band Radar system and the AN/SPS-48/49 radar systems in numerous ship classes. The AN/SPS-48 Radars are long-range, three-dimensional (3-D) radars used to search, detect and provide space-stabilized, three-coordinate (range, bearing, height) data for air intercept control and designation to a weapon system. The AN/SPS-49A(V)1 radar system is a long range, two dimensional (2-D), L-Band air surveillance radar installed on USN major combatants. The AN/SPY-4 Volume Search Radar (VSR) is an S-Band active phased array radar deployed on CVN 78 providing volume surveillance and air traffic control. EASR funding will develop a modern 3-D air search radar that addresses the latest requirements for Aviation and Amphibious Warfare Ships and closely conforms to existing combat system interfaces, as well as aligns with existing shipboard space, weight, and power limits. The architecture and acquisition strategy for EASR is intended to drive a lower recurring cost by utilizing the same core technology for both fixed-face and rotating array variants. EASR will provide for engineering of component and system level technology improvements for equipment used by in-service air search radars.

Enterprise X-Band Illuminator (EXI): EXI funding will develop an X-band illuminator transmitter modification compatible with the EASR radar and Combat System suite for CVN and Amphibious ship classes.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: SYSTEMS ENGINEERING - SPEED TO FLEET (S2F)	0.600	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					
- Completed development, integration, and testing of an advanced signal processing capability for X-Band radars (S2F)					
- Completed S2F land based and Self Defense Test Ship (SDTS) testing					
- Continued S2F Final Demonstration on SDTS					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continued transition of an advanced signal processing capability for X-Band radars (Speed To Fleet) ***FY 2017 Plans:*** - Complete S2F Final Demonstration on SDTS - Complete transition of an advanced signal processing capability for X-Band radars (Speed To Fleet) - Obtain S2F approval to begin Fleet software transition process ***FY 2018 Base Plans:*** - N/A ***FY 2018 OCO Plans:*** - N/A					
Title: SYSTEMS ENGINEERING - EASR	12.265	42.790	50.721	0.000	50.721
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Awarded EASR Engineering and Manufacturing Development (E&MD) contract - Initiated EASR Preliminary Design - Conducted EASR Technical Interchange Meetings (TIMs) - Commenced support to EASR Integrated Product Teams (IPTs) and Working Groups (WGs) to facilitate successful integration of the radar with the ship and combat system Increase from PB17 planned values primarily due to updated contract costs that modified phasing of funding requirements for Systems Engineering between FY16 and FY17. Based on contract funding requirements, initial funding increment at award was higher than previously planned, re-phasing a portion of the spending plan into FY16. ***FY 2017 Plans:*** - Conduct EASR TIMs - Continue supporting EASR IPTs and WGs to facilitate successful integration of the radar with the ship and combat system - Conduct EASR Preliminary Design Review (PDR) - Complete EASR Preliminary Design - Initiate EASR Detailed Design - Conduct EASR Critical Design Review (CDR)					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Finalize EASR Detailed Design Review - Procure EDM Hardware and Pedestal Hardware - Initiate EASR test planning in support of test site requirements - Build up Array and commence integration of array Decrease in FY17 from PB17 planned values primarily due to revised contract costs that modified phasing of funding requirements for Systems Engineering between FY16 and FY17. Based on contract funding requirements, initial funding increment at award was higher than previously planned, re-phasing a portion of the spending plan from FY17 to FY16. ***FY 2018 Base Plans:*** - Conduct EASR TIMs - Commence EASR Simulator System Testing - Conduct Subsystem Level Testing - Continue EASR test planning in support of test site requirements - Continue supporting EASR IPTs and WGs to facilitate successful integration of the radar with the ship and combat system - Initiate EASR test planning in support of test requirements ***FY 2018 OCO Plans:*** - N/A					
Title: SYSTEMS ENGINEERING - X BAND ILLUMINATOR (EXI)	1.000	8.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Awarded EXI Development contract - Initiated EXI Preliminary Design - Commenced support to EXI Integrated Product Teams (IPTs) and Working Groups (WGs) to facilitate successful integration of the radar with the ship and combat system - Conducted EXI TIMs					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Decrease in FY16 from PB17 planned values primarily due to contract awarded in the latter part of FY16, with incurred costs lower than originally planned; realized FY16 costs were reassessed and updated for phasing of allocations for EXI Systems Engineering between FY16 and FY17. ***FY 2017 Plans:*** - Complete EXI Preliminary Design - Conduct EXI Preliminary Design Review (PDR) - Initiate EXI Detailed Design - Continue support to EXI IPTs and WGs to facilitate successful integration with the ship and combat system - Conduct EXI TIMs Increase from PB17 planned values primarily due to contract awarded in the latter part of FY16 and updated phasing of funding between FY16 and FY17, resulting in less activity realized in FY16 and more of the effort needed in FY17. Phasing of allocation for EXI Systems Engineering was reduced in FY16 and increased FY17 accordingly. ***FY 2018 Base Plans:*** N/A - There is no funding required for the EXI Development contract in FY18 since NATO SEASPARROW will be completing the EXI upgrade effort. ***FY 2018 OCO Plans:*** N/A					
Title: GOVERNMENT ENGINEERING SERVICES - EASR	5.250	15.313	16.147	0.000	16.147
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Supported EASR Source Selection - Analyzed and assessed EASR E&MD contract deliverables - Provided support to EASR IPTs and WGs - Supported EASR cost, schedule, and performance management, contract administration, contract oversight, risk identification and risk mitigation - Provided support to EASR TIMs					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Decrease in FY16 from PB17 planned values primarily due to lower incurred costs than originally planned and reallocation among Systems Engineering, Government Engineering Services, and Program Management Support to support FY16 efforts. ***FY 2017 Plans:*** - Provide support to EASR PDR - Continue to analyze and assess EASR E&MD contract deliverables - Continue to provide support to EASR IPTs and WGs - Support regular EASR Program Management Reviews - Continue to support EASR cost, schedule, and performance management, contract administration, contract oversight, risk identification and risk mitigation - Continue to provide support to EASR TIMs - Provide support to EASR Critical Design Review (CDR) - Commence support for EASR Test Site Preparation - Support EASR interface integration with the Combat System Suite Increase from PB17 planned values was primarily due to updated and more detailed FY17 task planning updates that determined an increased effort for Government Engineering Services was required to review, analyze, and validate radar development technical progress and contract deliverables. ***FY 2018 Base Plans:*** - Continue to analyze and assess EASR E&MD contract deliverables - Continue to provide support to EASR IPTs and WGs - Continue to support regular EASR Program Management Reviews - Continue to support test site preparations - Support EASR simulator system testing - Continue to support EASR interface integration with the combat system suite - Continue to support EASR cost, schedule, and performance management, contract administration, contract oversight, risk identification and risk mitigation - Continue to provide support to EASR TIMs ***FY 2018 OCO Plans:*** - N/A					
Title: GOVERNMENT ENGINEERING SERVICES - EXI	0.300	0.300	0.300	0.000	0.300

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Provided support to EXI IPTs and WGs Decrease in FY16 from PB17 planned values primarily due to late FY16 contract award and change in strategy where majority of development is being conducted by NATO SEASPARROW Missile System (NSSMS) upgrades for the tracker-illuminator that meets EXI requirements, and realignment of funding from EXI to DBR (project 3188). ***FY 2017 Plans:*** - Provide support to EXI PDR - Continue to provide support to EXI IPTs and WGs Decrease in FY17 from PB17 planned values primarily due to change in development strategy where majority of development is being conducted by NATO SEASPARROW Missile System (NSSMS) upgrades for the tracker-illuminator that meets EXI requirements. Government Engineering Services continues to support EXI technical requirements with NSSMS Program. ***FY 2018 Base Plans:*** - Provide support to EXI CDR - Continue to provide support to EXI IPTs and WGs ***FY 2018 OCO Plans:*** N/A					
Title: PROGRAM MANAGEMENT SUPPORT - EASR/EXI	0.982	1.634	1.497	0.000	1.497
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Supported EASR Source Selection - Provided support to EASR/EXI IPTs and WGs - Analyzed and assessed EASR E&MD and EXI contract deliverables - Supported execution of EASR/EXI cost, schedule, and performance management, contract administration, contract oversight, risk identification and risk mitigation - Provided support to EASR/EXI TIMs					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Decrease in FY16 from PB17 planned values primarily due to FY16 costs that were lower than previously estimated due to efficiencies realized during the source selection. ***FY 2017 Plans:*** - Continue to provide support to EASR/EXI IPTs and WGs - Continue to analyze and assess EASR E&MD and EXI contract deliverables - Continue to conduct regular EASR/EXI Program Management Reviews - Continue to support execution of EASR/EXI cost, schedule, and performance management, contract administration, contract oversight, risk identification and risk mitigation - Continue to provide support to EASR/EXI TIMs Increase in FY17 from PB17 planned values primarily due to updated and more detailed FY17 task planning updates that determined an increased allocation for EASR and EXI program management support efforts was required in FY17. ***FY 2018 Base Plans:*** - Continue to provide support to EASR/EXI IPTs and WGs - Continue to analyze and assess EASR E&MD and EXI contract deliverables - Continue to conduct regular EASR/EXI Program Management Reviews - Continue to support execution of EASR/EXI cost, schedule, and performance management, contract administration, contract oversight, risk identification and risk mitigation - Continue to provide support to EASR/EXI TIMs ***FY 2018 OCO Plans:*** - N/A					
Accomplishments/Planned Programs Subtotals	20.397	68.037	68.665	0.000	68.665

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2026: *0204228N Radar Support*	19.841	14.363	30.086	-	30.086	23.823	29.708	28.364	28.930	752.443	1,099.281

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• O&MN/1C2C/0702228N: *0702228N/1C2C Radar Support*	2.184	2.547	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.136
• O&MN/1C1C/0702228N: *0702228N/1C1C Radar Support*	0.000	0.000	6.046	-	6.046	5.560	2.973	3.037	3.040	Continuing	Continuing

Remarks

D. Acquisition Strategy

Advanced Radar Technology (ART): ART efforts will develop and test an advanced signal processing capability for X-Band radars (Speed-to-Fleet).
EASR: The EASR Acquisition is a planned competitive procurement based on a radar specification that incorporates the latest requirements for aviation and amphibious warfare ships, closely conforms to existing combat system interfaces, and includes physical Space Weight and Power (SWAP) Not-to-Exceed (NTE) interface requirements from:
- CVN 79+, LHA(R), and LX(R) for Forward-Fit
- CVN, LHA, LPD for back-fit.

EXI: The EXI Acquisition is a planned procurement based on an illuminator specification that incorporates the latest requirements for aviation and amphibious warfare ships, closely conforms to existing combat system interfaces, and includes physical SWAP NTE interface requirements applicable to CVN 79+ and LHA(R).

E. Performance Metrics

Speed-to-Fleet (S2F) Electronic Protection (EP) new firmware/software changes testing
S2F EP Land Based and SDTS testing
S2F EP Final Demonstration on SDTS
S2F Approval to begin the Fleet software transition process
EASR Engineering and Manufacturing Development (E&MD) Contract RFP
EASR Engineering and Manufacturing Development (E&MD) Contract Award
EXI Contract RFP
EXI Contract Award
EASR E&MD
EXI Development
EASR E&MD System PDR
EXI System PDR
EASR E&MD System CDR
EXI System CDR
EASR E&MD Land Based System Integration Testing

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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EXI Land Based System Integration Testing
EASR Production Authorization
EXI Production Authorization

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering - S2F	C/CPFF	Northrop Grumman - ES : Baltimore, MD	0.308	0.300	May 2016	0.000		0.000		-		0.000	0.000	0.608	-
Systems Engineering - EASR	C/CPFF	EASR E&MD Contractor - Raytheon : Marborough, MA	0.000	12.265	Aug 2016	42.790	Dec 2016	50.721	Dec 2017	-		50.721	0.000	105.776	-
Systems Engineering - EXI	SS/CPFF	Raytheon : Portsmouth, RI	0.000	1.000	Aug 2016	8.000	Mar 2017	0.000		-		0.000	0.000	9.000	-
		Subtotal	0.308	13.565		50.790		50.721		-		50.721	0.000	115.384	-

Remarks

There is no funding required for the EXI Development Contract in FY18 since NATO SEASPARROW will be completing the EXI upgrade effort.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering - EASR	WR	NSWC/DD : Dahlgren, VA	0.000	3.137	Feb 2016	5.107	Dec 2016	5.406	Nov 2017	-		5.406	0.000	13.650	-
Government Engineering - EASR	WR	NSWC/CR : Crane, IN	0.000	0.594	Mar 2016	1.444	Dec 2016	1.567	Nov 2017	-		1.567	0.000	3.605	-
Government Engineering - EASR	WR	NSWC/PHD : Port Huneme, CA	0.000	0.381	Feb 2016	1.496	Dec 2016	1.619	Nov 2017	-		1.619	0.000	3.496	-
Government Engineering - EASR	WR	NSWC/ PHI : Philadelphia, PA	0.000	0.057	Mar 2016	0.156	Dec 2016	0.265	Nov 2017	-		0.265	0.000	0.478	-
Government Engineering - EASR	WR	NRL : Washington, DC	0.000	0.293	Mar 2016	1.150	Dec 2016	1.162	Nov 2017	-		1.162	0.000	2.605	-
Government Engineering - EASR	SS/CPFF	JHU/APL : Baltimore, MD	0.000	0.635	Apr 2016	4.420	Dec 2016	4.466	Dec 2017	-		4.466	0.000	9.521	-
Government Engineering - EASR	WR	SCSC : Wallops Island, VA	0.000	0.000		1.114	Dec 2016	1.125	Nov 2017	-		1.125	0.000	2.239	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering - EASR	WR	NSWC/CD : Bethesda, Maryland	0.000	0.160	Mar 2016	0.426	Dec 2016	0.537	Nov 2017	-		0.537	0.000	1.123	-
Government Engineering - EXI	WR	NSWC/DD : Dahlgren, VA	0.000	0.150	Feb 2016	0.150	May 2017	0.150	Nov 2017	-		0.150	0.000	0.450	-
Government Engineering - EXI	WR	NSWC/CR : Crane, IN	0.000	0.075	Mar 2016	0.075	May 2017	0.075	Nov 2017	-		0.075	0.000	0.225	-
Government Engineering - EXI	WR	NSWC/PHD : Port Huneme, CA	0.000	0.075	Feb 2016	0.075	May 2017	0.075	Nov 2017	-		0.075	0.000	0.225	-
		Subtotal	0.000	5.557		15.613		16.447		-		16.447	0.000	37.617	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering - S2F	WR	NRL : Washington, DC	0.281	0.300	Jan 2016	0.000		0.000		-		0.000	0.000	0.581	-
		Subtotal	0.281	0.300		0.000		0.000		-		0.000	0.000	0.581	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Management Services	C/CPIF	TBD ESS : TBD	0.000	0.000		0.235	Jun 2017	0.903	Dec 2017	-		0.903	0.000	1.138	-
Travel	Allot	TRAVEL : Washington, DC	0.000	0.043	Jan 2016	0.081	Nov 2016	0.026	Nov 2017	-		0.026	0.000	0.150	-
Support Management Services	C/CPIF	CACI : Washington, DC	0.000	0.142	Feb 2016	0.307	May 2017	0.307	Dec 2017	-		0.307	0.000	0.756	-
Support Management Services	SS/CPIF	SPA : Washington, DC	0.000	0.625	Feb 2016	0.668	Feb 2017	0.000		-		0.000	0.000	1.293	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604501N / *Advanced Above Water Sensors*	Project (Number/Name) 3236 / *Advanced Radar Technology*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Management Services	C/CPIF	TMB : Washington, DC	0.000	0.165	Feb 2016	0.261	Jan 2017	0.261	Dec 2017	-		0.261	0.000	0.687	-
Support Management Services	C/CPIF	STRATEGIC INSIGHT : Washington, DC	0.000	0.000		0.082	Jan 2017	0.000		-		0.000	0.000	0.082	-
		Subtotal	0.000	0.975		1.634		1.497		-		1.497	0.000	4.106	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.589	20.397		68.037		68.665		-		68.665	0.000	157.688	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*

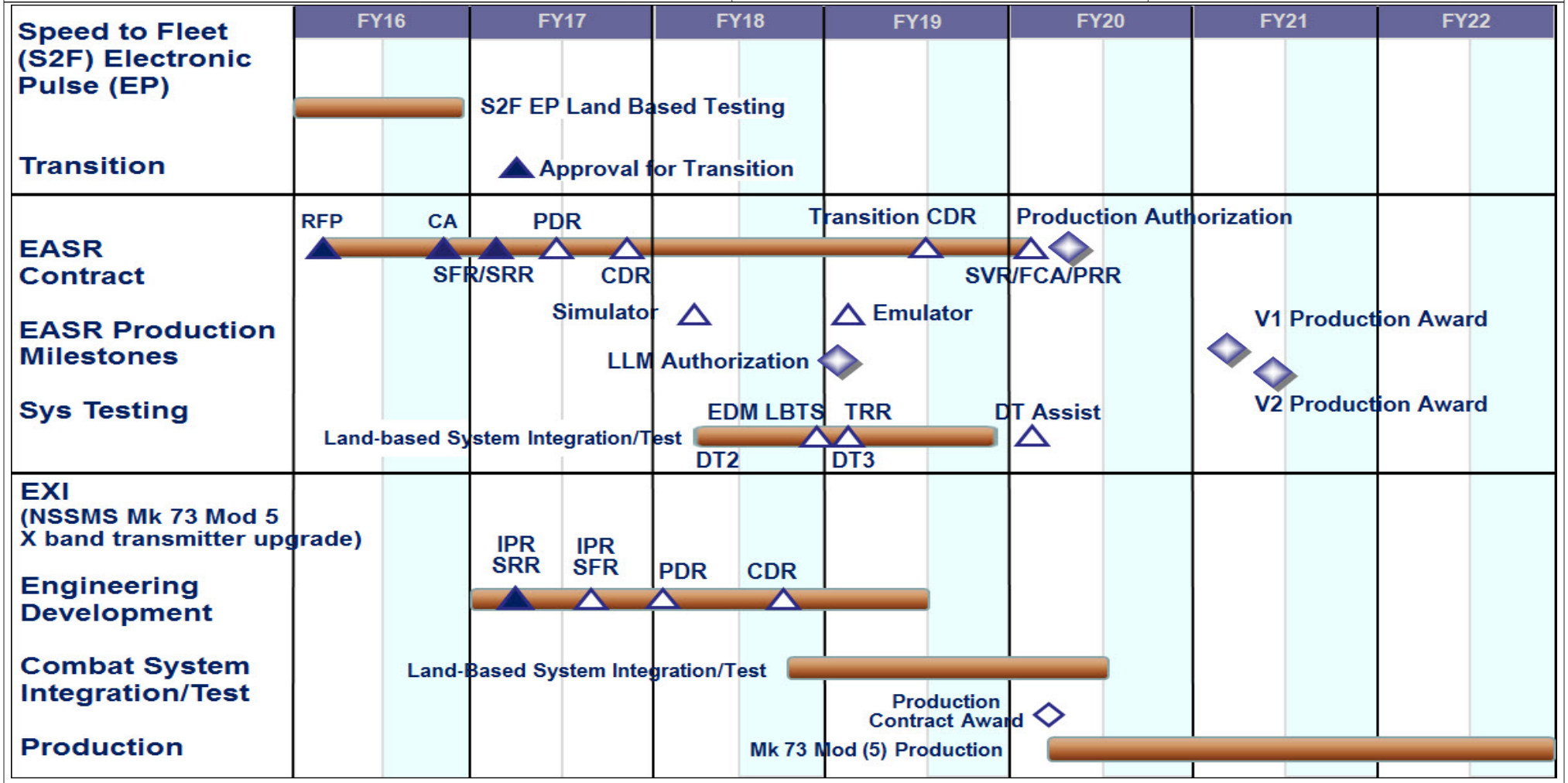


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3236				
Speed to Fleet (S2F) Electronic Pulse (EP) Land Based Testing	1	2016	4	2016
Enterprise Air Surveillance Radar (EASR) Engineering and Manufacturing Development (E&MD) Contract RFP	1	2016	1	2016
EASR Engineering and Manufacturing Development (E&MD) Contract Award	4	2016	4	2016
EASR E&MD	4	2016	1	2020
Enterprise X-Band Illuminator (EXI) Engineering Development	1	2017	2	2019
EASR System Functional Review (SFR)/System Requirements Review (SRR)	1	2017	1	2017
S2F Approval For Transition	1	2017	1	2017
EXI Interim Program Review (IPR) SRR	2	2017	2	2017
EASR System Preliminary Design Review (PDR)	2	2017	2	2017
EXI IPR SFR	3	2017	3	2017
EASR System Critical Design Review (CDR)	4	2017	4	2017
EXI System PDR	1	2018	1	2018
Delivery of EASR Simulator	2	2018	2	2018
EASR Developmental Test (DT) 2	1	2018	4	2018
EXI System CDR	3	2018	3	2018
EXI Land Based System Integration/Test	4	2018	2	2020
Delivery of EASR Emulator	1	2019	1	2019
EASR Long Lead Material Authorization	1	2019	1	2019
EASR Test Rediness Review (TRR) and DT3	1	2019	4	2019
EASR Transition CDR	3	2019	3	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3236 / *Advanced Radar Technology*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
EASR System Verification Review (SVR)/Functional Configuration Audit (FCA)/ Production Readiness Review (PRR)	1	2020	1	2020
EASR DT Assist	1	2020	1	2020
EXI Production Contract Award	1	2020	1	2020
EXI Production	1	2020	4	2022
EASR Production Authorization	2	2020	2	2020
EASR V1 Production Award	1	2021	1	2021
EASR V2 Production Award	2	2021	2	2021

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604501N / *Advanced Above Water Sensors*	Project (Number/Name) 3301 / *Improved Capabilities SPY-1 Radar*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3301: *Improved Capabilities SPY-1 Radar*	14.174	0.774	10.744	10.961	-	10.961	11.151	11.710	11.842	12.030	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Improved Capabilities for SPY-1 Radar: These Reliability, Maintainability, and Availability (RM&A) improvements and solid state technology insertions are intended to reduce cascading failures, mitigate obsolescence issues, and improve reliability in support of Anti-Air Warfare (AAW) and Ballistic Missile Defense (BMD) missions while still providing AN/SPY-1 Radar Total Ownership Cost Reductions. Improvements such as Solid State Insertion will yield reductions in annual fleet maintenance costs and is a top fleet requirement as part of the AEGIS Wholeness initiative. In addition to RM&A improvements, warfighting improvements funded in this line include: Transmitter Noise Cancellation (TNC) development will include hardware/software to counter low radar cross section, low altitude threats. Side Lobe Blanking (SLB) addresses shortfalls in mixed electronic attack environment while in an Integrated Air and Missile Defense (IAMD) mode. The Ship-Based Non-Cooperative Target Recognition (SBNCTR) program will develop algorithms to provide classification for targets. Transition of Advanced Calibration Experiment (ACE) from Baseline 7 into Baseline 9. Electronic Attack (EA) and Rapid Radar Capability Improvement Program (R2CIP) develop solutions for evolving EA threats. FY18 includes the continuation of development for ACE Phase 1, SBNCTR Phase 2, TNC, EA improvements, and 10KW Amp/CFA Solid State GaN.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Improved Capabilities SPY-1 Radar	0.774	10.744	10.961	0.000	10.961
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					
- Completed Microwave Tube (MWT) improvement design/development					
- Continued technology development for Gallium Nitride (GaN) Based 40W/400W Solid State Amplifier					
- Initiated technology development for 10KW Amplifier/Cross Field Amplifier (CFA) Solid State GaN replacement					
- Continued development of additional cost reduction initiatives					
- Completed System Design Review (SDR) reliability improvements					
FY 2017 Plans:					
- Complete Technology Development for GaN Based 40W/400W Solid State Amplifier					
- Continue Technology Development for 10KW Amplifier/CFA Solid State GaN replacement					
- Continue development of additional cost reduction initiatives					
- Initiate Transmitter Noise Cancellation (TNC) requirements analysis and conduct SDR					
- Perform concept development for Electronic Attack Improvements					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Initiate requirements development and design reviews for Ship-Based Non-Cooperative Target Recognition (SBNCTR) - Initiate Radar Integrated Product Team (IPT) support for all baselines - Initiate and Complete ACE Phase 1 requirements definition ***FY 2018 Base Plans:*** - Continue development of additional cost reduction initiatives - Continue TNC conduct PDR - Perform requirements analysis and specification updates for Electronic Attack Improvements - Continue requirements development and design reviews for SBNCTR Phase 2 - Continue Radar IPT support for all baselines - Complete ACE Phase 1 Demo - Complete ACE Phase 1 testing ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.774	10.744	10.961	0.000	10.961

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2980: *Items Less Than $5M*	17.866	18.602	36.855	-	36.855	26.592	26.483	29.827	15.360	Continuing	Continuing
• O&MN/1C2C/0702228N: *O&M,N AEGIS Wholeness SPY Transmitter Reliability*	3.716	4.040	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	17.948
• O&MN/1C1C/0702228N: *O&M,N AEGIS Wholeness SPY Transmitter Reliability*	0.000	0.000	4.222	-	4.222	4.332	4.414	4.504	4.596	Continuing	Continuing

Remarks

D. Acquisition Strategy

Improved Capabilities SPY-1 Reliability, Maintainability, and Availability (RM&A) will design and develop an Ordnance Alterations (ORDALT) Package for fixes and modifications to known transmitter, microwave tube (MWT), and logistic shortcomings (also includes the MK-99 Continuous Wave Illuminator (CWI) MWT. Investment in

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*

development of SPY-1 RM&A improvements to address failure mechanisms and improve reliability is planned to continue beyond the FYDP. Radar capability upgrades will be incorporated into Baselines 7 and 9.

E. Performance Metrics

- Complete 10KW Traveling Wave Tube/Continuous Wave Illumination Microwave Tube (TWT/CWI MWT) Improvement Design/Development/Monitoring
- Complete A/B EI Switch Improvement Design/Development
- Complete Sidewall Capacitor Monitoring Circuit
- Complete 10KW Monitoring Circuit development
- Complete Crossed Field Amplifier/Switch Tube (CFA/SWT) MWT Improvement Design Development
- Complete MWT Improvement Design/Development
- Complete Water Cooled Vane (WCV) to Double Duty (DD) engineering development
- Complete Simplified Driver (SDR) reliability design improvements
- Complete Gallium Nitride (GaN) based 40W/400W solid state amplifier development
- Complete 10KW GaN based amplifier for Pre-Drivers development
- Complete Switch Tube Drawer (STD) Reliability Project
- Complete GaN based Driver/Pre-Driver studies/investigations
- Complete Advanced Calibration Experiment (ACE) Baseline (BL) 9 Phase 1 Demo
- Complete Transmitter Noise Cancellation (TNC) SDR
- Complete Electronic Attack (EA) Studies and Rapid Radar Capability Program (R2CIP) concept development
- Complete ACE BL 9 Phase 1 testing
- Complete TNC Preliminary Design Review (PDR)
- Complete EA studies and R2CIP requirements analysis and spec updates
- Complete SBNCTR integration and test
- Complete TNC Critical Design Review (CDR)
- Complete Sidelobe Blanking (SLB) requirements analysis
- Complete SBNCTR EA
- Complete ACE Phase 1 certification
- Complete EA and R2CIP Technology Development
- Complete TNC integration and test
- Complete 10KW Amplifier/CFA Solid State GaN Technology Development
- Complete TNC merge to Common Source Library (CSL)
- Complete ACE Phase 2 requirements definition
- Complete ACE Phase 2 Demo
- Complete ACE Phase 2 certification testing
- Complete EA improvements and R2CIP implementation and testing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SYSTEM ENGINEERING	MIPR	Office of Naval Research : Arlington, VA	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	-
SYSTEM ENGINEERING	C/CPFF	Raytheon : Sudbury, MA	1.941	0.000		0.000		0.000		-		0.000	0.000	1.941	-
SYSTEM ENGINEERING	WR	NSWC/Crane, IN : Crane, IN	11.233	0.774	Jan 2016	1.370	Nov 2016	1.257	Dec 2017	-		1.257	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	SS/CPFF	Lockheed Martin : Moorestown, NJ	0.000	0.000		4.936	Feb 2017	5.748	Dec 2017	-		5.748	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	SS/CPFF	AEGIS Techrep : Moorestown, NJ	0.000	0.000		0.409	Mar 2017	0.417	Dec 2017	-		0.417	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	SS/FP	APL/JHU : Laurel, MD	0.000	0.000		0.465	Jan 2017	0.305	Feb 2018	-		0.305	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	WR	CSCS : Dahlgren, VA	0.000	0.000		0.194	Jan 2017	0.198	Dec 2017	-		0.198	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	WR	NRL : Washington, DC	0.000	0.000		0.395	Nov 2016	0.357	Dec 2017	-		0.357	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	MIPR	MIT/LL : Lexington, MA	0.000	0.000		0.350	Mar 2017	0.350	Mar 2018	-		0.350	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	WR	NSWC DD : Dahlgren, VA	0.000	0.000		1.739	Nov 2016	1.375	Nov 2017	-		1.375	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	WR	NSWC/PHD : Port Hueneme, CA	0.000	0.000		0.230	Nov 2016	0.200	Dec 2017	-		0.200	Continuing	Continuing	Continuing
		Subtotal	14.174	0.774		10.088		10.207		-		10.207	-	-	-

Remarks

FY17-FY21 funding realigned from Project 3232 to 3301.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Allot	PEOIWS2 : Washington, DC	0.000	0.000		0.020	Feb 2017	0.020	Jan 2018	-		0.020	Continuing	Continuing	Continuing
Support Management Services	C/CPIF	TBD ESS : TBD	0.000	0.000		0.636	Jun 2017	0.606	Dec 2017	-		0.606	Continuing	Continuing	Continuing
Support Management Services	C/CPFF	CACI : Washington, DC	0.000	0.000		0.000		0.046	Dec 2017	-		0.046	Continuing	Continuing	Continuing
Support Management Services	C/CPFF	TMB : Washington, DC	0.000	0.000		0.000		0.040	Dec 2017	-		0.040	Continuing	Continuing	Continuing
Support Management Services	C/CPFF	Strategic Insight : Washington, DC	0.000	0.000		0.000		0.042	Dec 2017	-		0.042	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.656		0.754		-		0.754	-	-	-

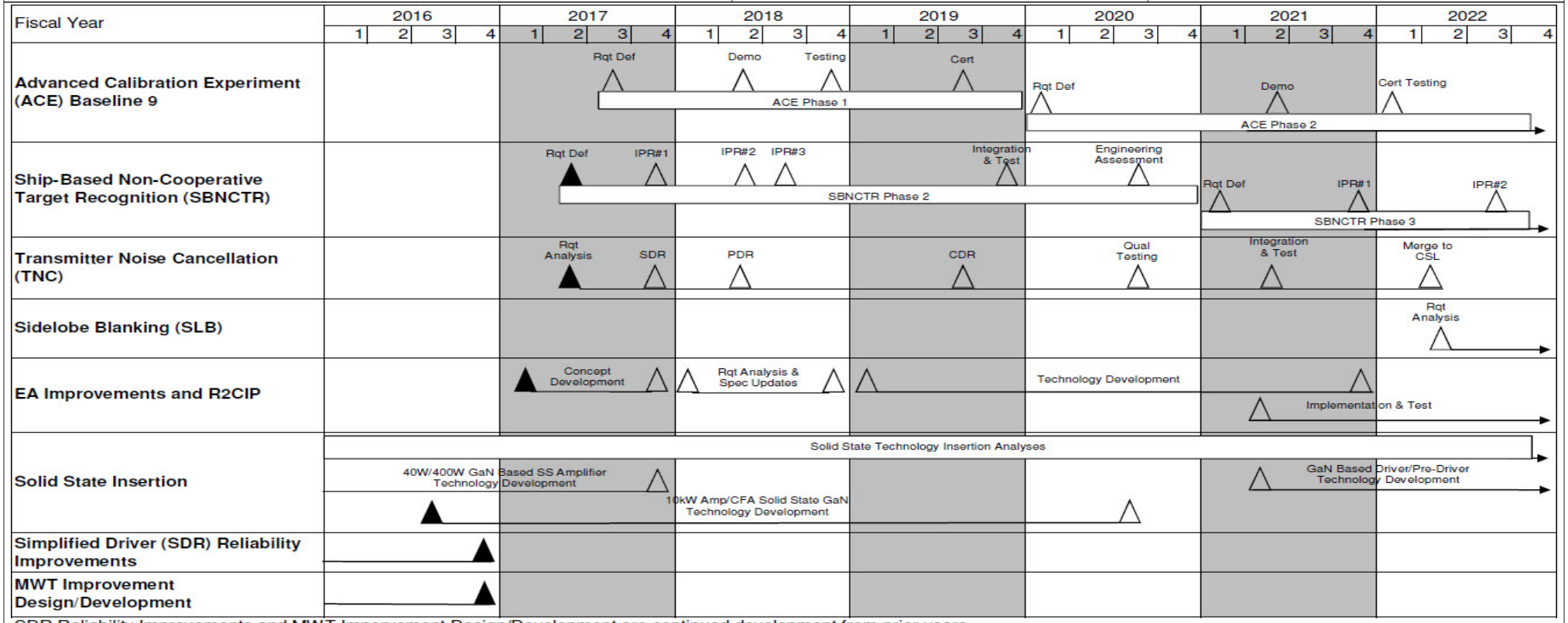
Remarks

TBD ESS: Engineering Support Services (ESS) recompete is in process. Contract award will occur in FY17.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	14.174	0.774		10.744		10.961		-		10.961	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*



SDR Reliability Improvements and MWT Imporvement Design/Development are continued development from prior years.
SLB, EA Improvements and R2CIP, and Solid State Insertion continue beyond the FYDP.

Acronyms:

CFA: Crossed Field Amplifier
CDR: Critical Design Review
CSL: Common Source Library
EA: Electronic Attack
GaN: Gallium Nitride
IPR: In-Progress Review
MWT: Microwave Tube
PDR: Preliminary Design Review
R2CIP: Rapid Radar Capability Improvement Program
SDR: System Design Review
SS: Solid State

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3301				
MWT Improvement Design/Development	1	2016	4	2016
Simplified Driver (SDR) Reliability Improvements	1	2016	4	2016
40W/400W GaN Based Solid State Amplifier Technology Development	1	2016	4	2017
Solid State Technology Insertion Analyses	1	2016	4	2022
10KW GaN Amplifier/CFA Solid State Technology Development	3	2016	3	2020
EA Improvements and R2CIP Concept Development	1	2017	4	2017
Ship-Based Non-Cooperative Target Recognition Phase 1 (SBNCTR) Rqts Definition	2	2017	2	2017
Transmitter Noise Cancelation (TNC) Requirements Analysis	2	2017	2	2017
Advanced Calibration Experiment (ACE) Phase 1 Requirements Definition	3	2017	3	2017
SBNCTR Phase 2 IPR #1	4	2017	4	2017
TNC System Design Review (SDR)	4	2017	4	2017
EA Improvements and R2CIP Rqt Analysis & Spec Updates	1	2018	4	2018
TNC PDR	2	2018	2	2018
ACE Phase 1 Demo	2	2018	2	2018
SBNCTR Phase 2 IPR #2	2	2018	2	2018
SBNCTR Phase 2 IPR #3	3	2018	3	2018
ACE Phase 1 Testing	4	2018	4	2018
EA Improvements and R2CIP Technology Development	1	2019	4	2021
ACE Phase 1 Certification	3	2019	3	2019
TNC CDR	3	2019	3	2019
SBNCTR Phase 2 Integration & Test	4	2019	4	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ACE Phase 2 Requirements Definition	1	2020	1	2020
SBNCTR Phase 2 Engineering Assessment	3	2020	3	2020
TNC Qualification Testing	3	2020	3	2020
SBNCTR Phase 3 Requirements Definition	1	2021	1	2021
GaN based Driver/Pre-Driver Technology Development	2	2021	4	2022
ACE Phase 2 Demo	2	2021	2	2021
EA Improvements and R2CIP	2	2021	4	2022
TNC Integration & Test	2	2021	2	2021
SBNCTR Phase 3 IPR #1	4	2021	4	2021
ACE Phase 2 Certification Testing	1	2022	1	2022
SLB Requirements Analysis	2	2022	4	2022
TNC Merge to Common Source Library	2	2022	2	2022
SBNCTR Phase 3 IPR #2	3	2022	3	2022

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	1,394.846	106.342	117.476	130.981	-	130.981	122.278	105.693	99.737	102.847	Continuing	Continuing
0219: *Sub Sonar Improvement (ENG)*	894.757	66.974	67.179	86.718	-	86.718	71.360	60.412	61.609	62.820	Continuing	Continuing
0742: *Sub Integrated Ant System*	282.342	23.969	27.080	15.652	-	15.652	14.745	13.936	14.179	14.455	Continuing	Continuing
0775: *Submarine Supt Equip Prog*	9.243	5.372	13.215	9.117	-	9.117	10.760	9.949	10.173	10.377	Continuing	Continuing
1411: *Sub Tact Comm System*	208.504	10.027	10.002	19.494	-	19.494	25.413	21.396	13.776	15.195	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Submarine Support Equipment Program develops and improves submarine Electronic Warfare Support (EWS) technology, components, equipment, and systems that will increase submarine operational effectiveness, safety of ship, and survivability in an increasingly dense and sophisticated electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Enhancements are necessary for submarine EWS to be operationally effective in the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare and Intelligence Collection, Maritime protection, and Joint Strike.

The Submarine Sonar Improvement Program delivers block updates to Sonar Systems and improved Sensors installed on SSN 688, 688I, SSN 21, VIRGINIA, SSBN, and SSGN Class Submarines to maintain clear acoustical, tactical and operational superiority over submarine and surface combatants in all scenarios through detection, classification, localization, and contact following. Current developments are focused on supporting Littoral Warfare, Regional Sea Denial, Battle Group Support, Diesel Submarine Detection, Surveillance, and Peacetime Engagement.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	109.893	117.476	123.012	-	123.012
Current President's Budget	106.342	117.476	130.981	-	130.981
Total Adjustments	-3.551	0.000	7.969	-	7.969
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.700	0.000			
• SBIR/STTR Transfer	-2.850	0.000			
• Program Adjustments	0.000	0.000	8.500	-	8.500
• Rate/Misc Adjustments	-0.001	0.000	-0.531	-	-0.531

Change Summary Explanation

FY 2016 funding was reduced by $0.700 million as a result of Navy Comptroller mid-year execution review in order to support higher departmental priorities.

Funding increases in FY 2018 support testing Low Probability of Intercept / Low Probability of Detection (LPI/LPD) communications systems enabling command and control (C2) in an environment where traditional communications are not available, thereby reducing platform susceptibility of detection and attack by the adversary. Increases also provide funding for Link 16, which enhances submarine communication system by providing a two-way Tactical Data Link (TDL) processing capability on all Submarine platforms.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*	Project (Number/Name) 0219 / *Sub Sonar Improvement (ENG)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0219: *Sub Sonar Improvement (ENG)*	894.757	66.974	67.179	86.718	-	86.718	71.360	60.412	61.609	62.820	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program delivers block updates to Sonar Systems installed on SSN 688, 688I, SSN 21, VIRGINIA, SSBN, and SSGN Class Submarines to maintain clear acoustical, tactical and operational superiority over submarines and surface combatants in all scenarios through detection, classification, localization, and contact following.

Acoustics Rapid COTS Insertion (A-RCI) was a multi-phased evolutionary development geared toward addressing acoustic superiority issues through the rapid introduction of interim development products applicable to all classes of submarines. A-RCI Phase I and II introduced Towed Array processing improvements, Phase III introduced Spherical

Array processing improvements, and Phase IV provided High Frequency (HF) Array processing improvements for SSN 688I, SSGN, VIRGINIA, and SSN 21 Class Submarines. As part of CNO N972's plan to maintain acoustic superiority for in-service submarines, a joint cooperative effort with PEO IWS-5 was established to deliver annual Advanced Processing

Builds (APBs) to prevent obsolescence and deliver ongoing capability improvements. The capabilities in the APBs will be integrated as part of A-RCI certified systems. The development of the Large Vertical Array (LVA) will improve detection and enhanced tactical situational awareness capability for tracking targets of interest, and supports acoustic superiority objectives for the Virginia and OHIO class submarines.

Sensor efforts provide increased operational capabilities for littoral operations, situational awareness, and reliability improvements.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: APB Productionization	12.000	11.904	12.724	0.000	12.724
Articles:	-	-	-	-	-
Description: APB productionization provides for the transition of APB capability improvements to the Fleet for the integration, testing and formal certification. FY 2018 transitions SSBN Combat System Modernization efforts into APB Productionization.					
FY 2016 Accomplishments: Continue Advanced Processing Build (APB) Sea Testing, Integration, and Certification. This effort is primarily the transition of APB software from development to A-RCI for integration, testing, and formal certification.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue Advanced Processing Build (APB) Sea Testing, Integration, and Certification. This effort is primarily the transition of APB software from development to A-RCI for integration, testing, and formal certification. ***FY 2018 Base Plans:*** Continue Advanced Processing Build (APB) Sea Testing, Integration, and Certification. This effort transitions APB software from development to A-RCI for integration, testing, and formal certification. This effort incorporates conversion of the SSBN legacy sonar system to the TI/APB model and the introduction of signal processing associated with the Large Vertical Array (LVA). ***FY 2018 OCO Plans:*** N/A					
Title: Integration and Testing ***Articles:*** ***Description:*** Integration and Testing provides support to integrated and test APB's into all submarine classes with numerous sensor systems. FY 2018 transitions efforts associated with integration and testing for SSBN Combat System Modernization. ***FY 2016 Accomplishments:*** Support Advanced Processing Builds installed on SSN 688I, SSN 688, SSN 21, SSGN 726, SSBN, and VA Class Submarines. FY15 funding level incorporates a $14.3M higher Departmental priority cut, cancelling the TI12/APB13 software upgrade, breaking the TI/APB model which provides for a newer TI hardware baseline to receive two versions of software baselines. By cancelling TI12/APB 13 , eight SSN 688/688I, two SEAWOLF and three VIRGINIA Class submarines will not receive the latest software improvements as part of the APB 13 baseline. FY 2016 funding restores the funding to near (but below) FY 2014 level to enable planned upgrades to be incorporated into the TI14 baseline. ***FY 2017 Plans:*** Support Advanced Processing Builds installed on SSN 688I, SSN 688, SSN 21, SSGN 726, SSBN, and VA Class Submarines. FY 2017 funding provides integration and testing support to TI16 and prior TI baselines. ***FY 2018 Base Plans:*** Support Advanced Processing Builds installed on SSN 688I, SSN 688, SSN 21, SSGN 726, SSBN, and VA Class Submarines. Additional effort in FY 2018 incorporates the integration and testing associated with the refresh of technology and assimilation of capability required for conversion of the SSBN legacy sonar system to	33.493 -	33.972 -	37.128 -	0.000 -	37.128 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
the TI/APB model. These efforts also incorporate the integration and testing associated with the introduction of signal processing in support of the Large Vertical Array (LVA). ***FY 2018 OCO Plans:*** N/A					
Title: SSBN Combat System Modernization ***Articles:*** ***FY 2016 Accomplishments:*** This effort continues to incorporate SSBN combat systems into the APB/TI model. ***FY 2017 Plans:*** This effort completes the incorporation of SSBN combat systems into the APB/TI model. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	4.827 -	2.050 -	0.000 -	0.000 -	0.000 -
Title: Large Vertical Array (LVA) ***Articles:*** ***Description:*** Provides funding for the development of Large Vertical Array capability in the areas of detection and tracking for back-fit installation on Virginia Class and Ohio Class Submarines. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** This effort initiates development of SSBN Large Vertical Array (LVA) mechanical fixtures required to manufacture, transport, and install an LVA shipset on a submarine. ***FY 2018 Base Plans:*** This effort continues development of Large Vertical Array (LVA) acoustic modules; to include acoustic sensors, array material, outboard electronics, fairings, and associated cabling, to effectively incorporate the required	0.000 -	13.265 -	33.283 -	0.000 -	33.283 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
capabilities into the APB/TI model. This effort also continues development and initiates fabrication of 2 mechanical fixtures required to manufacture, transport, and install an LVA shipset on a submarine. ***FY 2018 OCO Plans:*** N/A					
Title: TB-29X Development	13.200	2.475	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Provides funding for the development of TB-29A equivalent Thin Line Array with long range detection and tracking with improved reliability, using improved telemetry. ***FY 2016 Accomplishments:*** Provides funding for the development of TB-29A equivalent Thin Line Array with long range detection and tracking with improved reliability, using improved telemetry. This effort incorporates TB-29X system development. Funding will provide for the procurement of a first article TB-29X array, testing and inspections in accordance with the Performance Specification. Testing will include environmental testing, acoustic calibration testing, self-noise tow testing and SONAR/TB-29X interface testing required to ensure the array meets all performance specifications. ***FY 2017 Plans:*** Completion of TB-29X system development. Funding will provide for first article TB-29X array testing and inspections in accordance with the Performance Specification. Testing will include environmental testing, acoustic calibration testing, self-noise tow testing and SONAR/TB-29X interface testing required to ensure the array meets all performance specifications. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: A-RCI Acoustic Superiority Integration	3.454	3.513	3.583	0.000	3.583
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Maintain Acoustic Superiority for In-service Submarines to deliver biannual Advance Processing Builds (APBs) to prevent obsolescence and deliver emerging capability improvements for current and future threats. ***FY 2016 Accomplishments:*** This effort delivers emerging capability improvements for current and future threats by supporting development, integration, and testing of emerging capability improvements in passive long range detection/wide area search for current and future threats in support of CNO ltr Ser N00/S0100 dtd 7 Jan 13, Subj: SSN/SSBN Acoustic Superiority Campaign Plan. ***FY 2017 Plans:*** This effort continues to develop emerging capability improvements for current and future threats by supporting development, integration, and testing of emerging capability improvements in passive long range detection/wide area search for current and future threats in support of CNO ltr Ser N00/S0100 dtd 7 Jan 13, Subj: SSN/SSBN Acoustic Superiority Campaign Plan. ***FY 2018 Base Plans:*** This effort continues to develop emerging capability improvements for current and future threats by supporting development, integration, and testing of emerging capability improvements in passive long range detection/wide area search for current and future threats in support of CNO ltr Ser N00/S0100 dtd 7 Jan 13, Subj: SSN/SSBN Acoustic Superiority Campaign Plan. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	66.974	67.179	86.718	0.000	86.718

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2150: *SSN Acoustic Equipment*	0.000	288.265	287.553	43.500	331.053	309.028	381.340	457.061	508.078	Continuing	Continuing
• OPN/2147: *SSN Acoustics*	232.134	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,556.264

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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D. Acquisition Strategy

Acoustic Systems:

A-RCI utilizes an open architecture and Commercial Off-the-Shelf products in support of new and upgraded sonar systems. A follow-on development and production sole source cost plus incentive fee contract was awarded to General Dynamics, Advanced Information Systems in April 2015 and a sole source contract was awarded to Lockheed Martin Maritime Systems & Sensors in February 2015. Program Reviews with the Milestone Decision Authority are conducted granting approval for the production options.

E. Performance Metrics

The A-RCI program will modernize approximately 8-12 SSNs per year through executing bi-annual software Advanced Processor Builds (APBs) and bi-annual Technical Insertions (TIs). Beginning with FY 2017 installations, the A-RCI program will modernize approximately 2-3 SSBNs per year through bi-annual APB/TI.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPIF	LMC : Manassas, VA	330.645	16.826	Dec 2015	15.202	Dec 2016	15.647	Dec 2017	-		15.647	Continuing	Continuing	Continuing
Ancillary Hardware Development	SS/CPFF	ARL University of Texas : Austin, TX	33.808	3.595	Mar 2016	3.232	Mar 2017	3.468	Mar 2018	-		3.468	Continuing	Continuing	Continuing
Systems Engineering	SS/CPFF	Johns Hopkins APL : Baltimore, MD	35.940	3.585	Dec 2015	3.251	Dec 2016	3.488	Dec 2017	-		3.488	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	LMC : VA - Keyport	33.133	3.127	Jan 2016	3.439	Jan 2017	3.690	Jan 2018	-		3.690	Continuing	Continuing	Continuing
Primary Hardware Development	C/CPIF	Progeny Systems : Manassas, VA	57.039	6.965	Jan 2016	6.635	Jan 2017	7.119	Jan 2018	-		7.119	Continuing	Continuing	Continuing
Systems Engineering	WR	NUWC : Newport, RI	166.485	5.951	Dec 2015	6.115	Dec 2016	6.561	Dec 2017	-		6.561	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Carderock, MD	25.638	2.674	Dec 2015	2.910	Dec 2016	3.122	Dec 2017	-		3.122	Continuing	Continuing	Continuing
TB-29X Development	C/CPIF	TBD : TBD	0.000	13.200	Mar 2016	2.475	Mar 2017	0.000		-		0.000	0.000	15.675	-
LVA Development	C/CPIF	TBD : TBD	0.000	0.000		13.265	Nov 2016	33.283	Nov 2017	-		33.283	Continuing	Continuing	Continuing
		Subtotal	682.688	55.923		56.524		76.378		-		76.378	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Software Development	C/CPIF	General Dynamics, AIS : Fairfax, VA	154.376	5.569	Dec 2015	5.344	Dec 2016	5.184	Dec 2017	-		5.184	Continuing	Continuing	Continuing
Primary Software Development	C/CPFF	Sedna Digital, : Manassas, VA	32.458	4.141	Dec 2015	4.041	Dec 2016	3.920	Dec 2017	-		3.920	Continuing	Continuing	Continuing
		Subtotal	186.834	9.710		9.385		9.104		-		9.104	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test and Evaluation	WR	OPTEVFOR : Norfolk, VA	9.756	0.525	Dec 2015	0.500	Dec 2016	0.485	Dec 2017	-		0.485	Continuing	Continuing	Continuing
		Subtotal	9.756	0.525		0.500		0.485		-		0.485	-	-	-

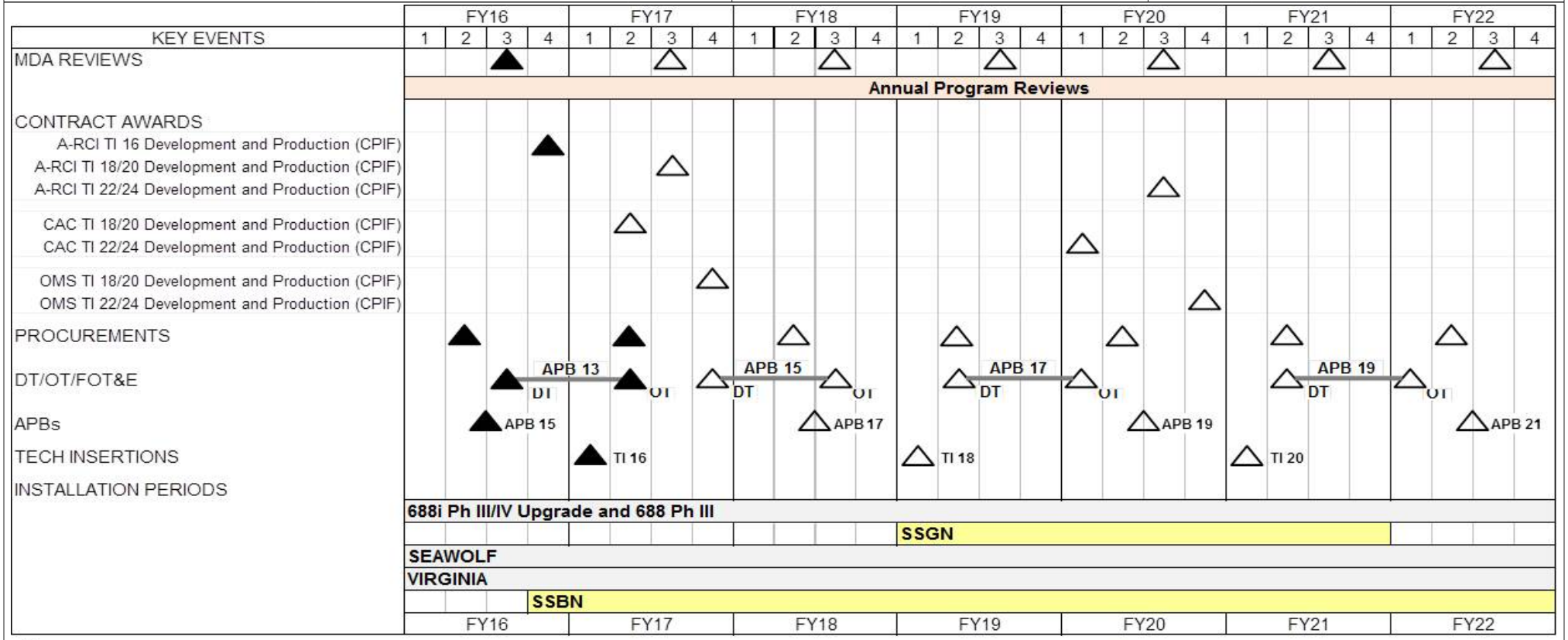
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Support Services	C/FFP	Alion, BAH, AECOM : Washington, DC	13.239	0.716	Dec 2015	0.673	Dec 2016	0.657	Dec 2017	-		0.657	Continuing	Continuing	Continuing
Travel	WR	NAVSEA : Washington, DC	2.240	0.100	Dec 2015	0.097	Dec 2016	0.094	Dec 2017	-		0.094	Continuing	Continuing	Continuing
		Subtotal	15.479	0.816		0.770		0.751		-		0.751	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	894.757	66.974		67.179		86.718		-		86.718	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*



▲ Completed Milestone
△ Upcoming Milestone

SSN Installation Period
SSGN/SSBN Installation Period

APB: Advanced Processing Builds
A-RCI: Acoustic – Rapid Commercial Off the Shelf (COTS) Insertion
CAC: Common Acoustic Cabinet
OMS: Ownship Monitoring System

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

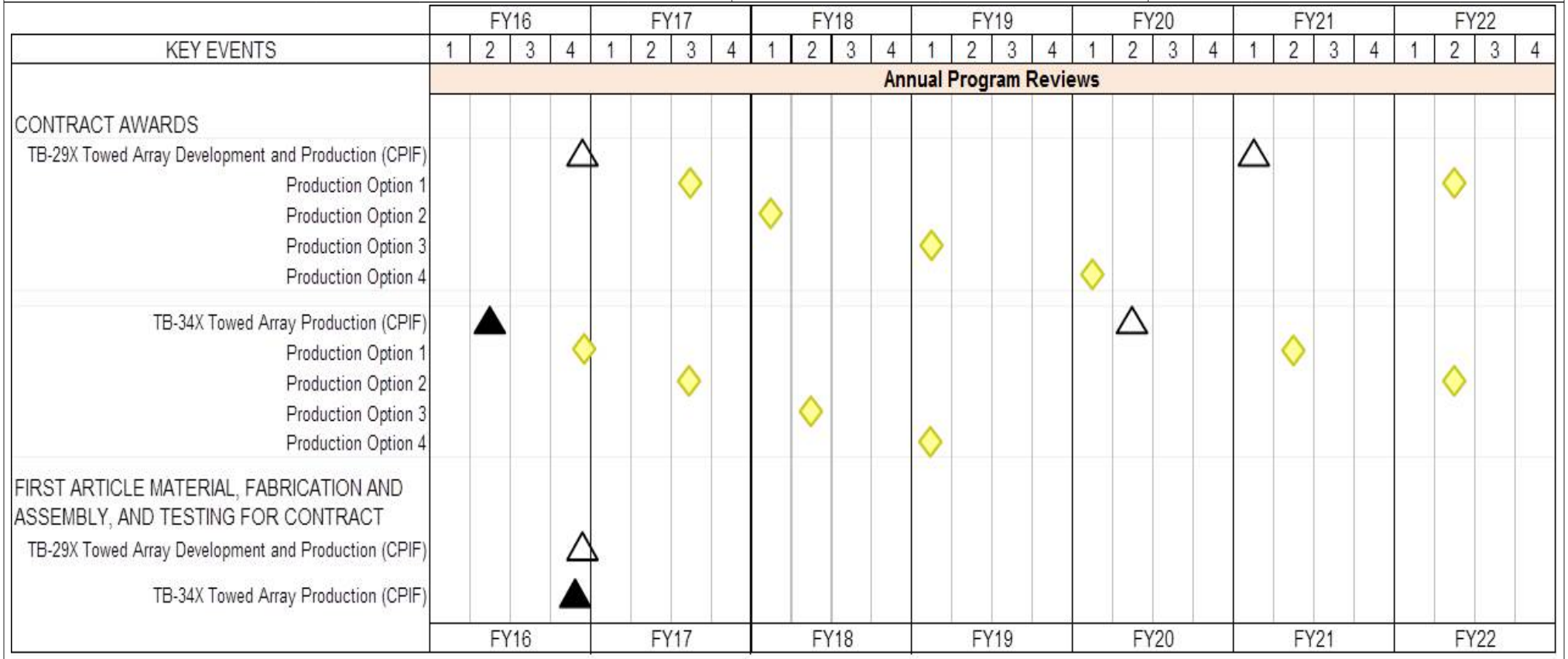


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0219 / *Sub Sonar Improvement (ENG)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0219				
ACOUSTICS	1	2016	4	2022
---Acquisition Milestones	3	2016	3	2022
---Annual Program Review	1	2016	4	2022
---Contract Awards - Acoustics	2	2016	4	2020
---Procurements	2	2016	2	2022
---DT/OT/FOT&E Tests	3	2016	2	2021
---APB Deliveries	3	2016	3	2020
---Tech Insertions	1	2017	1	2021
---Installation Periods	1	2016	4	2022
TOWED SYSTEMS DEVELOPMENT	1	2016	4	2022
---Contract Awards - Towed Systems	2	2016	1	2021
---Production Options	4	2016	2	2021
---First Article Procurement & Assembly	4	2016	4	2016

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*	Project (Number/Name) 0742 / *Sub Integrated Ant System*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0742: *Sub Integrated Ant System*	282.342	23.969	27.080	15.652	-	15.652	14.745	13.936	14.179	14.455	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The programs funded under the Submarine Integrated Antenna System project (0742) provide Nuclear Submarines (SSN), Ballistic Missile Submarines (SSBN) and Guided Missile Submarines (SSGN) with improved communications capabilities to support future Joint, Allied, and Naval operations. These efforts provide for the development and testing of submarine antennas designed to meet emerging submarine requirements: (a) Increased antenna performance while operating at speed and depth, (b) Increased stealth capability of existing and future antennas, (c) Antenna compatibility with new waveforms and transceiver equipment, (d) Increased capabilities of antennas and their interface to the External Communications System, and (e) Improved antenna design to reduce Total Ownership Cost. Specifically, this project funds research and development for submarine antennas including (1) Outboard Electronics (OE)-538/BRC Multi-Function Antenna, (2) OE-562 Submarine, High Data Rate (SubHDR), (3) New communications apertures to include Advanced High Data Rate (AdvHDR), (4) Low Probability of Intercept/Low Probability of Detection (LPI/LPD), and (5) Towed Buoy Antenna (AN/BRR- 6/6B) reliability improvements: (i) buoy shape, (ii) combined Radio Frequency (RF) and RF Depth Canister; and (iii) internal buoy Inertial Measurement Unit (IMU). Additional efforts funded under this project include (1) Antenna Improvements which develops Reliability, Maintainability, and Availability for legacy antennas, (2) Transition Engineering which develops future undersea communications capabilities for the 4th Generation Undersea Communications Architecture, and (3) the Optical Communications Project Arrangement with the United Kingdom which develops communications methods that will reduce the detectability of the submarines by the adversary. These efforts will help United States Naval Forces maintain information dominance in the undersea domain.

JUSTIFICATION FOR BUDGET ACTIVITY:

FY18 Antenna Transition Engineering: Development of future undersea communications capabilities in support of the 4th Generation Undersea Communications Architecture
FY18 SubHDR: Continue development of Reliability, Maintainability and Availability (RMA) components identified by research and analysis to maintain Operational Availability (Ao) throughout the life of the system.
FY18 AdvHDR: Continue Optical Communications Project Arrangement with United Kingdom to reduce the detectability of the submarines by the adversary.
FY18 Towed Buoy Antenna (AN/BRR-6/6B): Provides for the development, system integration, and testing of field change kits to improve system performance (measured by operational availability Ao) and reliability (measured by mean time between failures MTBF); of buoy shape, combined Radio Frequency (RF) and Depth Canisters, and Inertial Measurement Unit (IMU) which will reduce failures and increase reliability to improve the Strategic Communications posture for the SSBNs. Detection and risk mitigation of cybersecurity vulnerabilities to advance cybersecurity hardening. The Towed Buoy Antenna BRR-6/6B is a key component of the NC3 system and the primary means of receiving Emergency Action Messages (EAMs).

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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FY18 Antenna Improvements: Engineering studies, simulation/modeling, prototyping and Science and Technology (S&T) related efforts for RMA improvements and continued Preplanned Product Improvement (P3I) assessments in support of legacy submarine antenna applications.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Antenna Transition Engineering	4.861	3.743	3.682	0.000	3.682
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Continued to provide emerging requirements and Satellite Communications (SATCOM) database/link analysis for other development programs in support of current & future undersea communication architectures. - Continued Preplanned Product Improvement (P3I) investigation and development efforts towards legacy antenna systems. (Funding moved to Antenna Improvements in FY17). - Continued concept engineering, new technology evaluations, and assessments in support of current and future undersea antenna applications, to include Hull, Mechanical and Electrical (HM&E) interfaces. - Continued to investigate multiple usage antennas, including antennas that can be used for communications and other functions in support of Undersea Unmanned Aerial Systems (UAS) Communication and other Off Hull Platforms. - Continued development of future undersea communication capabilities in support of the 4th Generation Undersea Communication Architecture. - Commenced High Altitude Electromagnetic Pulse (HEMP) testing in support of Undersea Unarmed Aerial Systems (UAS) Communication and other Off Hull Platforms.					
FY 2017 Plans: - Complete HEMP testing in support of Undersea Unarmed Aerial Systems (UAS) Communication and other Off Hull Platforms. - Continue to provide emerging requirements and SATCOM database/link analysis for other development programs in support of current & future undersea communication architectures. - Continue concept engineering, new technology evaluations, and assessments in support of current and future undersea antenna applications, to include HM&E interfaces. - Continue to investigate multiple usage antennas, including antennas that can be used for communications and other functions in support of Undersea Unmanned Aerial Systems (UAS) Communication and other Off Hull Platforms. - Continue development of future undersea communication capabilities in support of the 4th Generation Undersea Communication Architecture.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue to provide emerging requirements and SATCOM database/link analysis for other development programs in support of current & future undersea communication architectures. - Continue concept engineering, new technology evaluations, and assessments in support of current and future undersea antenna applications, to include HM&E interfaces. - Continue to investigate multiple usage antennas, including antennas that can be used for communications and other functions in support of Undersea Unmanned Aerial Systems (UAS) Communication and other Off Hull Platforms. - Continue development of future undersea communication capabilities in support of the 4th Generation Undersea Communication Architecture. ***FY 2018 OCO Plans:*** N/A					
Title: Outboard Electronics (OE)-538	4.225	0.666	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Continued preparation for Developmental Test/Operational Test (DT/OT) in support of Full Rate Production (FRP). - Continued oversight for the development/integration of Global Positioning System (GPS) Anti-Jam (AJ)into OE-538 Increment 2. - Commenced development/update of required FRP acquisition documents. - Commenced and completed High Altitude Electromagnetic Pulse (HEMP) testing. - Commenced and completed OE-538A First Article Test. ***FY 2017 Plans:*** - Complete DT/OT in support of FRP. - Complete development/update of required FRP acquisition documents. - Complete oversight for the development/integration of GPS AJ into OE-538 Increment 2. - Commence and Complete FRP decision review and achieve Initial Operational Capability (IOC). ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: Submarine High Data Rate (SubHDR) Pre-Planned Product Improvement (P3I)	6.561	9.922	2.288	0.000	2.288
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Continued Underwater Explosion (UNDEX) development and testing. - Continued development of Reliability Maintainability, and Availability (RMA) components identified by research and analysis to maintain Operational Availability (Ao) throughout the life of the system. - Commenced Multivolt Power Supply (MVPS) development. - Commenced High Altitude Electromagnetic (HEMP) testing.					
FY 2017 Plans: - Complete UNDEX development and testing, and receive delivery of two functioning UNDEX prototype kits. - Continue development of MVPS. - Continue development of Reliability Maintainability, and Availability, (RMA) components identified by research and analysis to maintain Ao throughout the life of the system. - Commence development of the Traveling Wave Tube (TWT). - Commence Mast Motion Sensor (MMS) development. - Complete HEMP testing.					
FY 2018 Base Plans: - Continue development of RMA components identified by research and analysis to maintain Ao throughout the life of the system. - Continue development of the MVPS, MMS and TWT.					
FY 2018 OCO Plans: N/A					
Title: Advanced High Data Rate (AdvHDR)	3.805	3.534	3.508	0.000	3.508
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Commenced Optical Communications Project Arrangement with United Kingdom. - Commenced Low Probability of Intercept/Low Probability of Detection (LPI/LPD) Trade Study development.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue Optical Communications Project Arrangement with United Kingdom. - Complete LPI/LPD Phase 1 Trade Study Development. - Commenced research and analysis into communications payloads for the Tactically Oriented Technology Insertion Mast (TOTIM) to improve LPD. ***FY 2018 Base Plans:*** - Continue Optical Communications Project Arrangement with United Kingdom. - Commence LPI/LPD technology development phase. - Continue research and analysis into communications payloads for the Tactically Oriented TOTIM to improve LPD. ***FY 2018 OCO Plans:*** N/A					
Title: Submarine Communications Buoy (SCB) ***Articles:*** ***Description:*** A project arrangement between the United States and the United Kingdom. ***FY 2016 Accomplishments:*** - Completed Final Report. ***FY 2017 Plans:*** - N/A ***FY 2018 Base Plans:*** - N/A ***FY 2018 OCO Plans:*** N/A	0.240 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: Towed Buoy Antenna (AN/BRR-6/6B) ***Articles:*** ***FY 2016 Accomplishments:*** - Continued failure analysis on tow cables to improve system reliability of failing antennas. - Continued component development, system integration, testing, design specification/modification for reliability improvements of antenna/amplifier.	4.277 -	6.624 -	3.681 -	0.000 -	3.681 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continued support for Towed Buoy Antenna (BRR-6) Program providing program, contract, logistics, and system engineering management. - Commenced component development, system integration, testing, design specification/modification for reliability improvements of buoy shape improvements and combine Radio Frequency (RF) and Depth Cans efforts. ***FY 2017 Plans:*** - Complete failure analysis on tow cables to improve system reliability of failing antennas. - Complete component development, system integration, testing, design specification/modification for reliability improvements of antenna/amplifier. - Continue support for BRR-6 Program providing program, contract, logistics and system engineering management. - Continue component development, system integration, testing, design specification/modification for reliability improvements of buoy shape improvements and combine RF and Depth Cans efforts. - Commence component development, system integration, testing, design specification/modification for reliability improvements of Inertial Measurement Unit (IMU) integration. ***FY 2018 Base Plans:*** - Complete component development, system integration, testing, design specification/modification for reliability improvements of buoy shape improvements and combine RF and Depth Cans efforts. - Continue component development, system integration, testing, design specification/modification for reliability improvements of IMU integration. - Continue support for BRR-6 Program providing program, contract, logistics and system engineering management. - Commence cybersecurity vulnerability detection and hardening. ***FY 2018 OCO Plans:*** N/A					
Title: Antenna Improvements	0.000	2.591	2.493	0.000	2.493
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Previously funded under Transition Engineering for legacy antennas. ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue Pre-Planned Product Improvement (P3I) investigation and Reliability, Maintainability and Availability (RMA) development efforts previously funded under Transition Engineering for legacy antennas. ***FY 2018 Base Plans:*** - Continue P3I investigation and RMA development efforts for legacy antennas. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	23.969	27.080	15.652	0.000	15.652

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/3130: *Submarine Communication Equipment*	58.037	64.529	86.204	-	86.204	78.987	85.101	87.120	87.793	Continuing	Continuing

Remarks

Development of Submarine Anti-Jam GPS Enhancement (SAGE) capability in support of OE-538B future procurement is funded under project 0921.

D. Acquisition Strategy

Program Milestones (MS):
Outboard Electronics (OE)-538: 4th QTR FY17 Full Rate Production (FRP) Decision Review.

Test and Evaluation (T&E) Milestones:
OE-538: 2nd QTR FY17 Developmental (DT) for FRP; 3rd QTR FY17 Operational Test (OT) for FRP.

E. Performance Metrics

FY18 SubHDR: Reliability Maintainability, and Availability (RMA) development
FY18 AdvHDR: Tactically Oriented Technology Insertion Mast (TOTIM) Communications Payload performance specifications.
FY18 BRR-6: Development of reliability improvements for antenna/amplifier
FY18 Antenna Improvements: BRA-24 and OE-315 legacy antennas material solution investigation reports
FY18 Antenna Transition Engineering : Continue concept engineering, new technology evaluations, and assessments in support of current and future undersea antenna applications, to include Hull, Mechanical and Electric (HM&E) interfaces

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Future Capabilites (Antenna Trans Eng)	WR	SSC Pacific : San Diego, CA	2.560	1.664	Nov 2015	1.574	Nov 2016	1.478	Nov 2017	-		1.478	Continuing	Continuing	Continuing
Systems Engineering (Antenna Trans Eng)	WR	MITRE : McLean, VA	0.798	1.152	Dec 2015	0.545	Nov 2016	0.545	Nov 2017	-		0.545	Continuing	Continuing	Continuing
Systems Engineering (Antenna Trans Eng)	WR	NPS : Monterey, CA	0.226	0.060	Apr 2016	0.100	Feb 2017	0.100	Feb 2018	-		0.100	Continuing	Continuing	Continuing
Systems Engineering (Antenna Trans Eng)	WR	NUWC : Newport, RI	37.843	1.670	Nov 2015	0.890	Nov 2016	0.890	Nov 2017	-		0.890	Continuing	Continuing	Continuing
Software Dev (OE-538)	WR	NUWC : Newport, RI	0.478	0.096	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering (OE-538)	C/CPFF	FSI : San Diego, CA	1.813	0.361	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering (OE-538)	WR	NSWC : Philadelphia, PA	0.000	0.290	Nov 2015	0.042	Nov 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering (OE-538)	WR	NUWC : Newport, RI	9.524	1.524	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Research and Analysis Reliability Dev (SubHDR)	C/CPAF	BTP Systems : Ludlow, MA	1.734	1.675	Aug 2016	0.000		0.000		-		0.000	0.000	3.409	-
Research and Analysis Reliability Dev (SubHDR)	WR	NUWC : Newport, RI	5.041	1.000	Nov 2015	1.300	Nov 2016	0.991	Nov 2017	-		0.991	Continuing	Continuing	Continuing
Research and Analysis Reliability Dev (SubHDR)	C/CPIF	TBD : TBD	0.000	0.000		6.531	Jun 2017	0.967	Feb 2018	-		0.967	Continuing	Continuing	Continuing
Systems Engineering (SubHDR)	WR	NUWC : Newport, RI	18.420	0.700	Nov 2015	0.481	Nov 2016	0.000		-		0.000	Continuing	Continuing	Continuing
UNDEX Kit Development (SubHDR)	C/CPFF	Raytheon : Marlboro, MA	5.732	1.685	Jan 2016	0.000		0.000		-		0.000	0.000	7.417	-
OCOMMS PA Demonstration Systems Development (AdvHDR	C/CPAF	Aerospace : San Diego, CA	0.000	0.159	Feb 2016	0.144	Feb 2017	0.144	Feb 2018	-		0.144	Continuing	Continuing	Continuing
OCOMMS PA Demonstration Systems Development (AdvHDR)	C/CPAF	TBD : TBD	0.000	0.000		2.000	Jul 2017	1.250	May 2018	-		1.250	0.000	3.250	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering (AdvHDR)	WR	SSC Pacific : San Diego, CA	8.062	2.348	Nov 2015	1.000	Nov 2016	1.000	Nov 2017	-		1.000	Continuing	Continuing	Continuing
Systems Engineering (AdvHDR)	WR	NUWC : Newport, RI	4.346	0.639	Nov 2015	0.000		0.000		-		0.000	0.000	4.985	-
Technology Development (AdvHDR)	C/CPAF	TBD : TBD	0.000	0.000		0.000		0.750	Feb 2018	-		0.750	0.000	0.750	-
Systems/Hardware Dev (Submarine Communications Buoy - SCB)	WR	NSWC : Philadelphia	7.344	0.150	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering (BRR-6)	C/CPFF	FSI : San Diego, CA	0.272	0.175	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering/ Hardware Dev (BRR-6)	WR	NSWC : Philadelphia, PA	1.890	2.656	Nov 2015	2.531	Nov 2016	1.486	Nov 2017	-		1.486	Continuing	Continuing	Continuing
Systems Engineering/ Hardware Dev (BRR-6)	WR	NUWC : Newport, RI	1.510	0.850	Nov 2015	2.238	Nov 2016	1.356	Nov 2017	-		1.356	Continuing	Continuing	Continuing
Systems Engineering (BRR-6)	WR	NSWC : Carderock	0.000	0.371	Nov 2015	0.670	Nov 2016	0.063	Nov 2017	-		0.063	Continuing	Continuing	Continuing
Systems Engineering/ Hardware Dev (Antenna Improvements)	WR	NSWC : Philadelphia, PA	0.000	0.000		2.341	Nov 2016	2.243	Nov 2017	-		2.243	Continuing	Continuing	Continuing
Systems Engineering/ Hardware Dev (Antenna Improvements)	C/CPFF	G2 OPS : San Diego, CA	0.000	0.000		0.125	Nov 2016	0.125	Nov 2017	-		0.125	Continuing	Continuing	Continuing
Systems Engineering (BRR-6)	C/CPFF	G2 OPS : San Diego, CA	0.000	0.000		0.350	Nov 2016	0.175	Nov 2017	-		0.175	Continuing	Continuing	Continuing
Cybersecurity (BRR-6)	C/CPFF	G2 OPS : San Diego, CA	0.000	0.000		0.000		0.100	Nov 2017	-		0.100	Continuing	Continuing	Continuing
Product Development Prior Years	Various	Various : Various	133.535	0.000		0.000		0.000		-		0.000	0.000	133.535	110.707
		Subtotal	241.128	19.225		22.862		13.663		-		13.663	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Security Engineering (Antenna Trans Eng)	C/CPFF	G2 Ops : San Diego, CA	0.000	0.300	Nov 2015	0.250	Nov 2016	0.250	Nov 2017	-		0.250	Continuing	Continuing	Continuing
Cost Estimating (OE-538)	C/CPFF	TASC : San Diego, CA	0.406	0.098	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Logistics Support (OE-538)	WR	NSWC : Philadelphia, PA	0.000	0.036	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Logistics Support (OE-538)	WR	NUWC : Newport, RI	0.000	0.183	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Logistics Support (SubHDR)	C/CPFF	CSA : San Diego, CA	0.000	0.275	Feb 2016	0.217	Feb 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Cost Estimating (AdvHDR)	C/CPFF	TASC : San Diego, CA	0.000	0.075	Feb 2016	0.075	Feb 2017	0.075	Feb 2018	-		0.075	Continuing	Continuing	Continuing
Integrated Logistics Support (AdvHDR)	C/CPFF	CSA : San Diego, CA	0.000	0.075	Feb 2016	0.075	Feb 2017	0.075	Feb 2018	-		0.075	Continuing	Continuing	Continuing
Cost Estimating (BRR-6)	C/CPFF	TASC : San Diego, CA	0.059	0.050	Nov 2015	0.000		0.000		-		0.000	0.000	0.109	-
Integrated logistics Support (BRR-6)	C/CPFF	CSA : San Diego, CA	0.050	0.050	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated logistics Support (BRR-6)	WR	NUWC : Newport, RI	0.047	0.050	Nov 2015	0.277	Nov 2016	0.126	Nov 2017	-		0.126	Continuing	Continuing	Continuing
Integrated logistics Support (BRR-6)	WR	NSWC : Philadelphia, PA	0.000	0.000		0.438	Nov 2016	0.300	Nov 2017	-		0.300	Continuing	Continuing	Continuing
Integrated Logistics Support (Antenna Improvements)	C/CPFF	CSA : San Diego, CA	0.000	0.000		0.050	Feb 2017	0.050	Feb 2018	-		0.050	Continuing	Continuing	Continuing
Support Prior Years	Various	Various : Various	7.377	0.000		0.000		0.000		-		0.000	0.000	7.377	6.630
		Subtotal	7.939	1.192		1.382		0.876		-		0.876	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*	Project (Number/Name) 0742 / *Sub Integrated Ant System*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental/ Operational T&E (OE-538)	WR	NUWC : Newport, RI	6.305	1.351	Nov 2015	0.314	Nov 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Test & Evaluation (OE-538)	WR	COTF : Norfolk, VA	1.023	0.286	Nov 2015	0.250	Nov 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Test & Evaluation (SubHDR)	WR	NUWC : Newport, RI	1.295	0.750	Nov 2015	1.013	Feb 2017	0.164	Feb 2018	-		0.164	Continuing	Continuing	Continuing
Test & Evaluation (SCB)	WR	NUWC : Newport, RI	0.950	0.090	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test and Evaluation Prior Years	Various	Various : Various	4.207	0.000		0.000		0.000		-		0.000	0.000	4.207	4.207
		Subtotal	13.780	2.477		1.577		0.164		-		0.164	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support (Antenna Trans Eng)	C/CPFF	CSA : San Diego, CA	3.881	0.296	Nov 2015	0.384	Feb 2017	0.384	Feb 2018	-		0.384	Continuing	Continuing	Continuing
Program Management Support (SubHDR)	C/CPFF	CSA : San Diego, CA	3.346	0.476	Feb 2016	0.440	Feb 2017	0.166	Feb 2018	-		0.166	Continuing	Continuing	Continuing
Program Management Support (AdvHDR)	C/CPFF	CSA : San Diego, CA	7.563	0.228	Feb 2016	0.240	Feb 2017	0.249	Feb 2018	-		0.249	Continuing	Continuing	Continuing
Program Management Support (BRR-6)	C/CPFF	CSA : San Diego, CA	0.097	0.075	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Management/ Integrated Logistics Support (BRR-6)	C/CPFF	CSA : San Diego, CA	0.000	0.000		0.120	Feb 2017	0.075	Feb 2018	-		0.075	Continuing	Continuing	Continuing
Program Management Support (Antenna Improvements)	C/CPFF	CSA : San Diego, CA	0.000	0.000		0.075	Feb 2017	0.075	Feb 2018	-		0.075	Continuing	Continuing	Continuing
Management Services Prior Years	Various	Various : Various	4.608	0.000		0.000		0.000		-		0.000	0.000	4.608	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	19.495	1.075		1.259		0.949		-		0.949	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	282.342	23.969		27.080		15.652		-		15.652	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*

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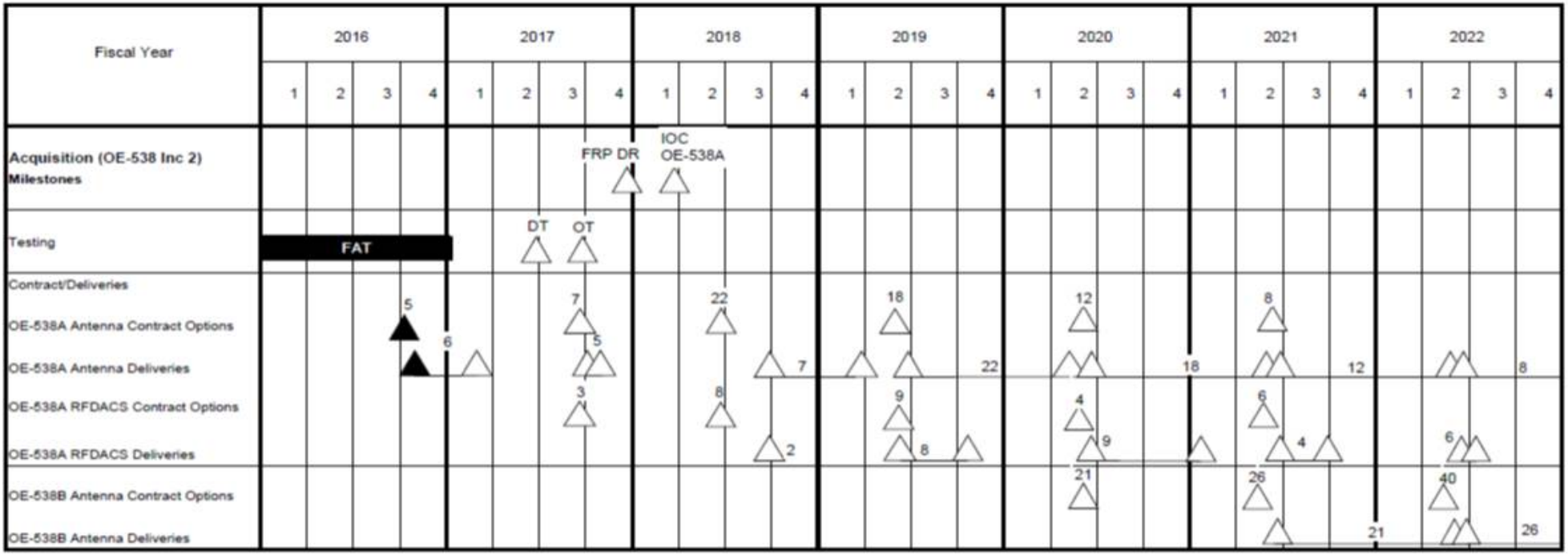
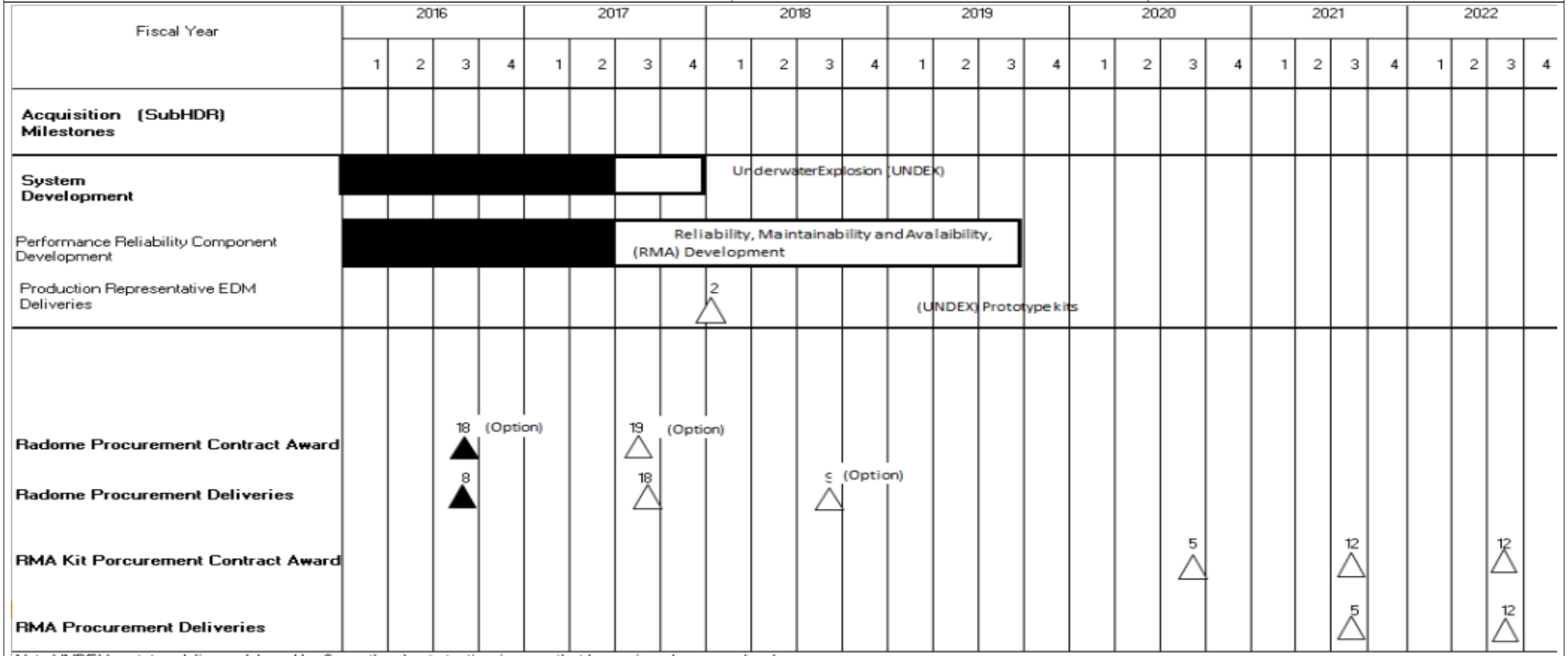


ACRONYMS:

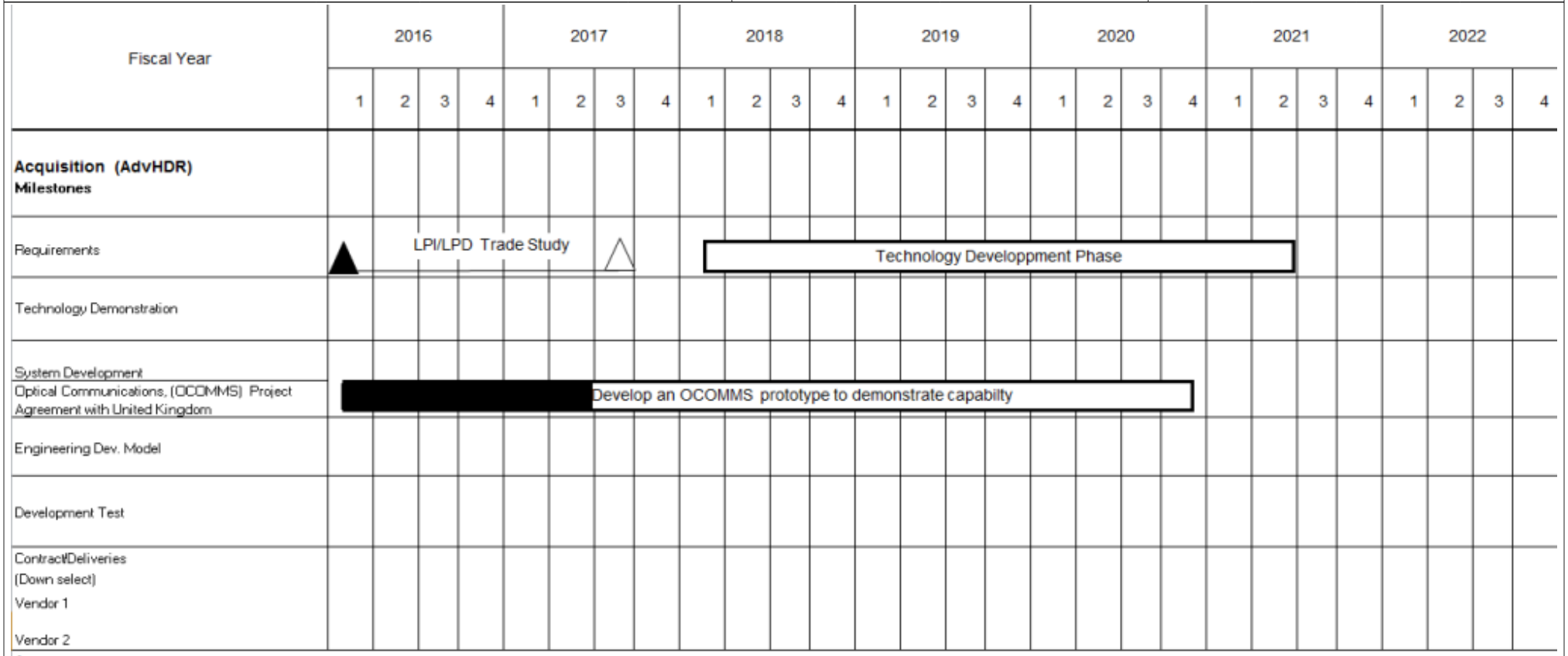
DT - Developmental Test	IOC - Initial Operational Capability
DR - Decision Review	OT - Operational Test
FAT - First Article Test	RFDACS - Radio Frequency Distribution and control System

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*



Note UNDEX prototye delivery delayed by 6 months due to testing issues that have since been resolved.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*



Acronyms:
AoA Analysis Of Alternatives
LPI/LPD Low Probability of Intercept/Low Probability of Detection

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*	

Fiscal Year	2016				2017				2018				2019				2020				2021				2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition (SCB) Milestones																												
Project Arrangement with United Kingdom	Complete Final Report																											

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*

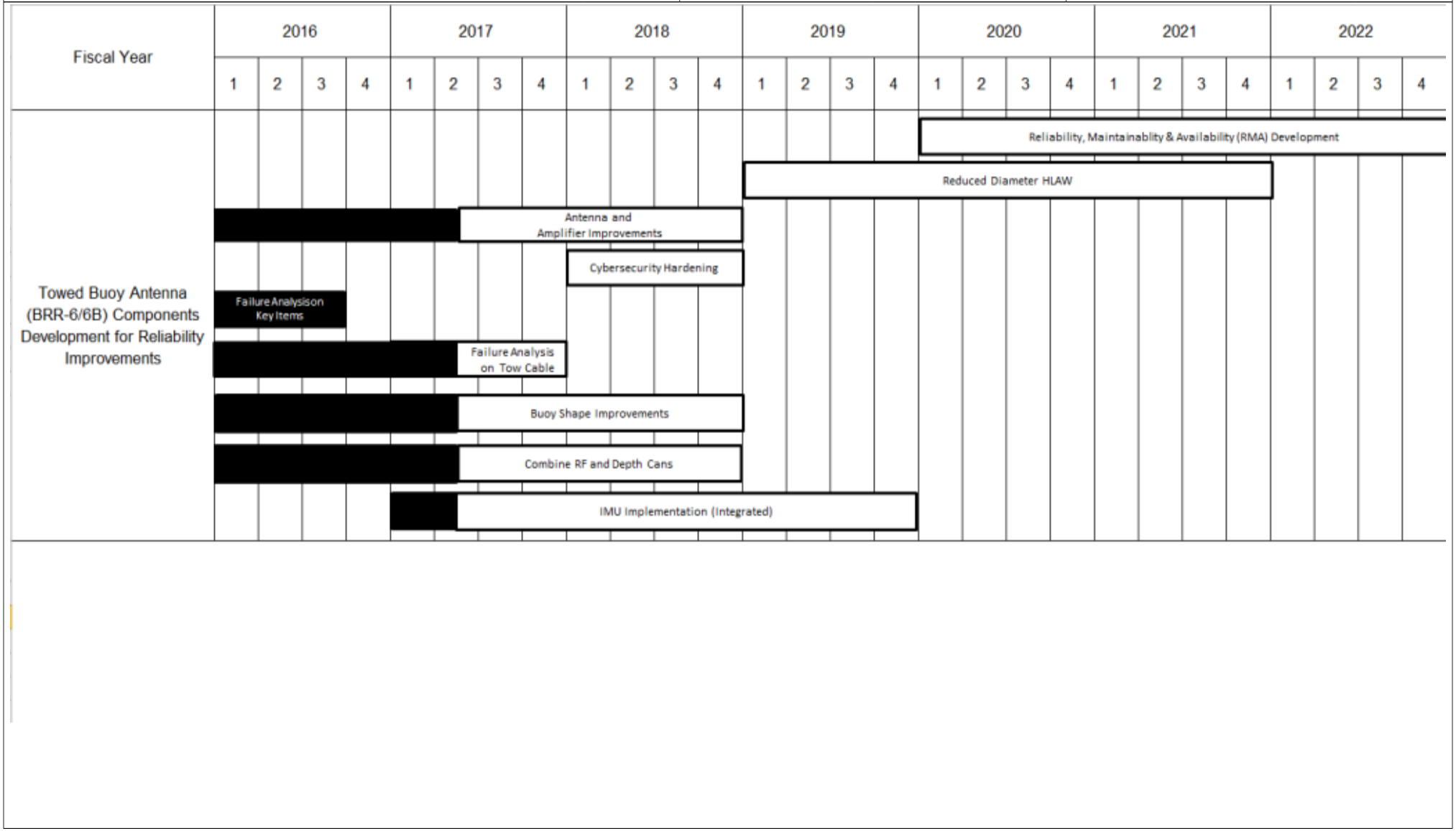


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*	

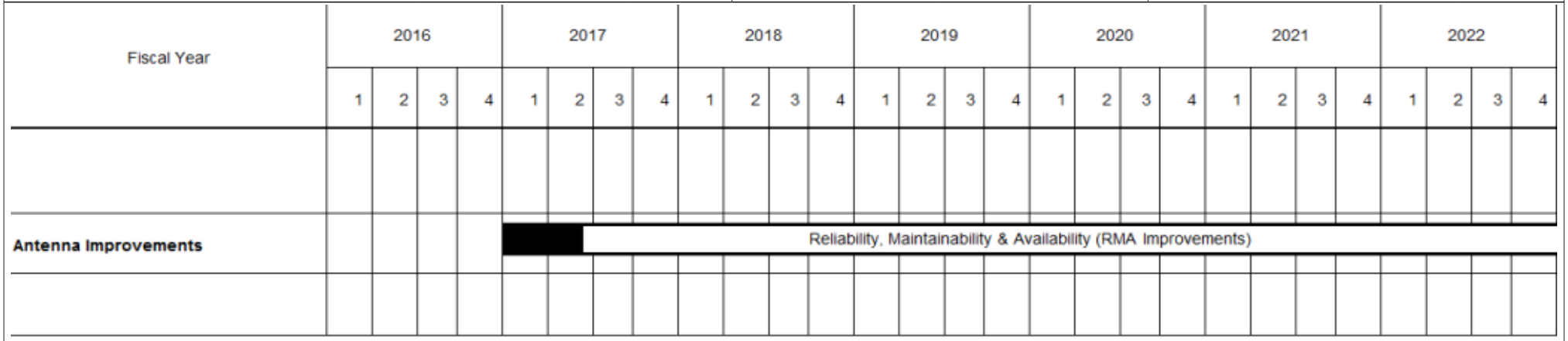


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0742				
OE-538A Full Rate Production Decision Review (FRP DR)	4	2017	4	2017
OE-538A Initial Operational Capability (IOC)	1	2018	1	2018
OE-538A First Article Test (FAT)	1	2016	4	2016
OE-538A DT for Full Rate Production (FRP)	2	2017	2	2017
OE-538A Operational Test (OT)	3	2017	3	2017
OE-538A Antenna Deliveries Year 1	4	2016	1	2017
OE-538A Antenna Contract Option Year 2	4	2016	4	2016
OE-538A Antenna Deliveries Year 2	3	2017	3	2017
OE-538A Antenna Contract Option Year 3	3	2017	3	2017
OE-538A Antenna Deliveries Year 3	3	2018	1	2019
OE-538A Antenna Contract Option Year 4	2	2018	2	2018
OE-538A Antenna Deliveries Year 4	2	2019	2	2020
OE-538A Antenna Contract Option Year 5	2	2019	2	2019
OE-538A Antenna Deliveries Year 5	2	2020	2	2021
OE-538A Antenna Contract Option Year 6	2	2020	2	2020
OE-538A Antenna Deliveries Year 6	2	2021	2	2022
OE-538A Antenna Contract Option Year 7	2	2021	2	2021
OE-538A Antenna Deliveries Year 7	2	2022	4	2022
OE-538A RFDACS Contract Options Year 1	3	2017	3	2017
OE-538A RFDACS Deliveries Year 1	3	2018	4	2018
OE-538A RFDACS Contract Option Year 2	2	2018	2	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
OE-538A RFDACS Deliveries Year 2	2	2019	4	2019
OE-538A RFDACS Contract Option Year 3	2	2019	2	2019
OE-538A RFDACS Deliveries Year 3	2	2020	1	2021
OE-538A RFDACS Contract Option Year 4	2	2020	2	2020
OE-538A RFDACS Deliveries Year 4	2	2021	3	2021
OE-538A RFDACS Contract Option Year 5	2	2021	2	2021
OE-538A RFDACS Deliveries Year 5	2	2022	3	2022
OE-538B Antenna Contract Option Year 1	2	2020	2	2020
OE-538B Antenna Deliveries Year 1	2	2021	2	2022
OE-538B Antenna Contract Option Year 2	2	2021	2	2021
OE-538B Antenna Deliveries Year 2	2	2022	4	2022
OE-538B Antenna Contract Option Year 3	2	2022	2	2022
Submarine High Data Rate (SubHDR) Under Water Explosion (UNDEX) Development	1	2016	4	2017
SubHDR Performance Reliability Component Development/Test	1	2016	3	2019
SubHDR Production Representative UNDEX Engineering Development Model (EDM) Deliveries	4	2017	1	2018
SubHDR Radome Procurement Contract/Option Awards	3	2016	2	2017
SubHDR Radome Production Deliveries	3	2016	3	2018
SubHDR RMA Kit Procurement Contract Award	3	2020	3	2022
SubHDR RMA Kit Deliveries	3	2021	3	2022
AdvHDR Technology Phase	1	2018	2	2021
AdvHDR Trade Study for LPI/LPD	1	2016	3	2017
AdvHDR Optical Communications Project Agreement with United Kingdom	1	2016	4	2020
SCB Project arrangement with United Kingdom (UK)	1	2016	4	2016
BRR-6/6B Antenna and Amplifier Improvements	1	2016	4	2018
BRR-6/6B Failure Analysis on Key Items	1	2016	3	2016

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0742 / *Sub Integrated Ant System*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
BRR-6/6B Failure Analysis on Tow Cable	1	2016	4	2017
BRR-6/6B Buoy shape Improvements	1	2016	4	2018
BRR-6/6B Combine RF and Depth Cans	1	2016	4	2018
BRR-6/6B IMU Implementation (Integrated)	1	2017	4	2019
BRR-6/6B Cybersecurity Hardening	1	2018	4	2018
BRR-6/6B Reduced Diameter	1	2019	4	2021
BRR-6/6B Reliability, Maintainability & Availability (RMA) Development	1	2020	4	2022
Antenna Improvements Reliability, Maintainability & Availability (RMA) Development	1	2017	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*	Project (Number/Name) 0775 / *Submarine Supt Equip Prog*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0775: *Submarine Supt Equip Prog*	9.243	5.372	13.215	9.117	-	9.117	10.760	9.949	10.173	10.377	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

FY 18 budget finalizes development of future capabilities for High Speed Network, Multifunctional Modular Mast (MMM) payload, spectrum digitization, and Communications Digital Aperture Correlation and Emitter improvements. Develop or transition from the Advanced Submarine Support Equipment Program (ASSEP) and Future Naval Capability (FNC) efforts to all Technical Insertions (TIs) capabilities for Electronic Attack (EA), tactical communications, Electronic Warfare (EW) sensor for future Task-Oriented Technology Insertion Mast (TOTIM) planned for TI-20 platforms, improved digitizers, and EW data processing. Develop advanced technology demonstrations for feasibility of systems capable of meeting later increments of AN/BLQ-10(B) for performance and digital data delivery.

The Submarine Support Equipment Program (SSEP) is responsible for the development and improvement of Submarine EW systems in support of effective operations in the following mission areas: Joint Littoral Warfare; Joint Intelligence Surveillance Reconnaissance (ISR), Indications and Warnings; Electronic Warfare; Information Operations including Cyber; and Special Operations Force (SOF) support. The rapid proliferation of complex radar, communications and navigation equipment available to potential adversaries creates an increasingly dense and sophisticated electromagnetic environment. Sustained and significant improvements to submarine EW systems are required to maintain tactical ship safety and operation effectiveness. As such, EW was raised to a submarine primary mission area in FY2012 by Commander Submarine Forces, and EW is listed as the number one modernization requirement by the Submarine Tactical Requirements Group (STRG). OPNAV letter dated 17 June 12, SER N97/12U144401 further codified this need by directing development of a digital Next Generation EW system as an evolution of the AN/BLQ-10 EW program. SSEP efforts in support of these needs include: integration of technology developed and transitioned from the Advanced Submarine Support Equipment Program (ASSEP) and Future Naval Capability (FNC) efforts into tactical EW systems, interface and capability integration with Submarine Warfare Federated Tactical System (SWFTS) Modernization efforts and development of the Next Generation EW AN/BLQ-10 system.

RDTE Funding line supports the entire AN/BLQ-10 EW procurement program. Increases in RDTE budget starting in FY15 supports development of EW Next Generation Architecture (NGA). The increase supports critical enabling technologies that will provide maximized electronic spectrum digitization and processing as well as Electronic Attack capability. Specific NGA technology development focus areas include simultaneous transmit and receive apertures, improved antenna sensors, high bandwidth digitizers, high speed networking, large capacity data storage and retrieval, and advanced algorithms for improved system performance and new capability. Specific increases in FY17 and FY19 are for Submarine Launched Decoy (SLD) and Tactical Data Link (TDL) Communications efforts respectively. SLD is a tactical speed-to-fleet initiative that meets Fleet concerns about submarine littoral operations. TDL communications is a program designed to increase submarine capability for joint operations.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Submarine Support Equipment Program	5.372	13.215	9.117	0.000	9.117

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0775 / *Submarine Supt Equip Prog*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
FY 2016 Accomplishments: TI-14 DT. Updated AN/BLQ-10 software baseline changes for SWFTS and Non-Propulsion Electronic Systems (NPES), Software Problem Report (SPR) Resolution and Software Enhancement. Completed partial testing of TI-16 Processor Upgrades and incorporate ETIS set into TI16 baseline including procurement of Signal Distribution Subsystem (SDS) Engineering Development Model (EDM) Radio Frequency modules for initial integration testing. Demonstrations included the successful testing of capability and technology improvements in the extreme electronic warfare environment of the Vigilant Hammer II exercise. Held advanced technology demonstrations for feasibility of systems capable of meeting later increments of AN/BLQ-10(B) for performance and digital data delivery.					
FY 2017 Plans: Perform TI-14 Operational Test (OT). Update AN/BLQ-10 software baseline changes for SWFTS and NPES, SPR Resolution and Software Enhancement. Completion of TI-16 Next Generation EW AN/BLQ-10 system development, integration and testing. Develop TI-18 Processor Upgrades. Complete TI-18 NRE updates to Next Generation EW AN/BLQ-10 system incorporating Digital Onboard Trainer (OBT), Wideband Digital Apertures, and Embedded Built in Test (BIT). Start development of TI-20 capabilities for High Speed Network, Multi-function Modular Mast (MMM) payload, spectrum digitization, and Communications Digital Aperture Correlation and Emitter improvements. Develop or transition from Advanced Submarine Support Equipment Program (ASSEP) and Future Naval Capabilities (FNC) efforts to TI-20 capabilities, EW sensor for future Task-Oriented Technology Insertion Mast (TOTIM) planned for TI-20 platforms, improved digitizers, and EW data processing. Develop advanced technology demonstrations for feasibility of systems capable of meeting later increments of AN/BLQ-10(B) for performance and digital data delivery. Develop the final specifications for the Submarine Launched Decoy (SLD).					
FY 2018 Base Plans: Update AN/BLQ-10 software baseline changes for SWFTS and NPES, SPR Resolution and Software Enhancement. Completion of TI-18 Next Generation EW AN/BLQ-10 system development, integration and testing. Continued development of TI-20 capabilities for High Speed Network, MMM payload Next Generation EW System, and Communications Digital Aperture Correlation and Emitter improvements. Develop or transition from FNC and ASSEP efforts to TI-20 capabilities, EW sensor for future TOTIM planned for TI-20 platforms, improved digitizers, and EW data processing. Develop advanced technology demonstrations for feasibility of systems capable of meeting later increments of AN/BLQ-10(B) for performance and digital data delivery.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 0775 / *Submarine Supt Equip Prog*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Development of TI-20 configuration and architecture documentation and initial efforts for the development of the TI-20 software design. Testing for MMM Payload, submarine launched decoy buoy, high speed network, improvements to emitter algorithms, improvements to correlation algorithms, improvements to vulnerability assessment algorithms, and digital OBT include side by side laboratory testing, at sea testing (inclusive of TEMPALT development and crew training), Fleet experimentation coordination and support, and technology demonstrations. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	5.372	13.215	9.117	0.000	9.117

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2560: *Submarine Supt Equip Prog*	83.472	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	958.736
• SCN/2013: *VIRGINIA Class Submarine*	5,318.210	4,955.219	5,225.911	-	5,225.911	7,181.369	7,209.343	6,534.775	5,263.896	48,161.837	150,856.878
• RDT&E/0604558N: *New Design SSN*	150.442	113.013	120.087	-	120.087	100.116	82.832	88.828	90.507	Continuing	Continuing
• RDT&E/0603562N: *Submarine Tactical Warfare Sys*	10.172	8.782	13.834	-	13.834	9.545	11.448	11.680	11.910	Continuing	Continuing
• OPN/0840: *Sub Periscope, Imaging and Supt Equip Prog*	0.000	154.421	151.240	-	151.240	203.895	244.660	228.294	220.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

AN/BLQ-10 (V) EW System - Procurements are executed/managed in accordance with Acquisition Plan (Rev 10) for AN/BLQ-10(V) EW System dtd 02/01/17 and the Single Acquisition Management Plan dtd 06/12/14.

E. Performance Metrics

The RDD program goal is to respond to urgent operational needs within 30 days and provide for rapid development and fielding of prototype solutions within 270 days.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*				Project (Number/Name) 1411 / *Sub Tact Comm System*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
1411: *Sub Tact Comm System*	208.504	10.027	10.002	19.494	-	19.494	25.413	21.396	13.776	15.195	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Submarine Tactical Communications System budget item (1411) funds the Common Submarine Radio Room (CSRR) program, which provides a fully integrated and tested communications architecture of Command, Control, Communications, Computers, and Intelligence (C4I) program of record components, providing secure voice and data communications for all submarine classes. The CSRR program, via an end-to-end integrated test environment, ensures that submarine communications systems: (a) enhance assured information transfer via automated and integrated network management; (b) support assured command and control, (c) provide submarine Internet Protocol (IP) connectivity; (d) are interoperable with Nuclear Command, Control, and Communications (NC3), United States and allied/coalition military networks; (e) meet NC3 strategic messaging requirements; and (f) provide improved reliability, maintainability, and availability. The CSRR program includes the development of a network-controlled computer based trainer to support training requirements. The CSRR program provides systems engineering efforts associated with implementation of new technology allowing submarines to connect to the global information grid. The new technology will also ensure the submarine's continued ability to participate in network-centric warfare and exploit its inherent stealth capabilities in support of the Navy, NC3, Joint, and allied/coalition fight to achieve total battlespace information dominance.

Additional efforts funded under the Submarine Tactical Communications System budget item include (1) Undersea Platforms Special Communications, which provides fully integrated and tested Low Probability of Intercept / Low Probability of Detection (LPI/LPD) communications systems enabling command and control (C2) in an environment where traditional communications are not available, thereby reducing platform susceptibility of detection and attack by the adversary and (2) Link 16, which provides an enhanced submarine communication system by providing a two-way Tactical Data Link (TDL) processing capability on all Submarine (Nuclear) (SSN), Guided Missile Submarine (Nuclear) (SSGN) and Ballistic Missile Submarine (Nuclear) (SSBN) platforms. The Link 16 program provides submarine Command & Control systems with Link 16 tactical network communications capabilities for situational awareness in a contested environment and is a key element in naval tactical networking. The new technology ensures the submarine's continued ability to participate in network-centric warfare and exploit its inherent stealth capabilities in support of the Navy, Nuclear Command, Control, and Communications (NC3), Joint, and allied/coalition fight to achieve total battlespace information dominance. These efforts are a continuation of the LPI/LPD and Link 16 efforts previously funded under the Submarine Integrated Antenna System Project (0742)/Advanced High Data Rate (HDR) program/project.

JUSTIFICATION FOR BUDGET ACTIVITY:
These programs are funded under ENGINEERING and MANUFACTURING DEVELOPMENT because they encompass development and demonstration of new end-items.

CSRR: Funding in FY18 is to complete CSRR Increment 1 Version 4 systems engineering development for OHIO Class ballistic missile (SSBN), OHIO Class guided missile (SSGN), VIRGINIA, LOS ANGELES, and SEAWOLF Class attack (SSN) submarines and ensure Supply Chain Risk Management (SCRM) compliance. Complete development of platform specific builds for Control and Management (C&M) software incorporating Increment 1 Version 4 capabilities and award follow-on

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

C&M Software contract. Conduct CSRR Increment 1 Version 4 Developmental Testing (DT), Operational Testing (OT), Emergency Action Message (EAM) certification testing as well as data analysis and Targeting Change Message (TCM) testing. Complete development of the Multi-purpose Reconfigurable Training System (MRTS) software for Increment 1 Version 4 capabilities and commence development of the MRTS software for Increment 1 Version 5. Continue CSRR Increment 1 Version 5 systems engineering development and modernization. CSRR Increment 1 Version 4 is planned to address equipment obsolescence and End of Support issues. CSRR Increment 1 Version 5 will be another more complex modernization to the CSRR suite and address work station obsolescence.

Acquisition Decision Memorandum signed by Assistant Secretary of Navy for Research, Development & Acquisition dated 15 July 2008 approved consolidating Increments 1 and 2 to a single Increment 1 with multiple block upgrades (Versions). CSRR is currently post Milestone C and in Full Rate Production (FRP) and Deployment until FY 2030.
LPI/LPD: Funding in FY18 is to commence shore integration of LPI/LPD solution sets to support DoD Teleports and DoN Submarine Broadcast Control Authorities. Commence afloat integration of LPI/LPD solution sets on LOS ANGELES, SSBN, VIRGINIA, SSGN and SEAWOLF Class submarines. Commence Environmental Qualification Testing (EQT) and LPI/LPD Phase 2 Trade Study Development.
Link 16: Funding in FY18 is to complete the Link 16 tactical network communications capability Analysis of Alternatives (AoA). Commence systems engineering development of Link 16 tactical network communications capability and porting of the Tactical Data Link (TDL) Processor Software to a different processor for integration. Commence Lab integration of the TDL processor with Multifunctional Information Distribution System (MIDS) into the submarine architecture.

Requirements documented in Commander Naval Surface Force (CNSF) letter dated 24 October 2005.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Common Submarine Radio Room (CSRR)	10.027	10.002	10.994	0.000	10.994
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Continued updating the Common Submarine Radio Room (CSRR) Acquisition Plan, Acquisition Strategy, Systems Engineering Plan (SEP) and Program Protection Plan to reflect changes for Increment 1 Version 4 through Version 6. - Continued CSRR Increment 1 Version 4 systems engineering development and modernization for the LOS ANGELES, SSBN, VIRGINIA, SSGN, and SEAWOLF Class submarines. - Continued development of platform specific builds of Increment 1 Version 4 Control and Management software for LOS ANGELES, SSBN, VIRGINIA, SSGN, and SEAWOLF Class capabilities. - Continued Multi-purpose Reconfigurable Training System (MRTS) software upgrade for Increment 1 Version 4 CSRR baseline for LOS ANGELES, SSBN, and SSGN Class operator trainer and VIRGINIA Class maintenance trainer.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continued implementation of Increment 1 Version 4 security upgrades to meet Cybersecurity and multiple certification requirements for General Service (GENSER) and Sensitive Compartmented Information (SCI) for all CSRR platforms. - Continued Federal Information Security Management Act (FISMA) statutory requirement for Cybersecurity compliance and correction of Increment 1 Version 1 - Version 4 Cybersecurity deficiencies. - Continued Supply Chain Risk Management (SCRM) assessment as part of Program Protection Plan revision. - Commenced planning for CSRR Increment 1 Version 3 Joint Interoperability Test Command (JITC) Re-Certification. - Commenced development of the Test and Evaluation Master Plan (TEMP) and all preparations for Increment 1 Version 4 Developmental Test (DT) and Operational Test (OT) events.					
FY 2017 Plans: - Complete CSRR Increment 1 Version 3 Joint Interoperability Test Command (JITC) Re-Certification. - Continue updating the CSRR Acquisition Plan, Acquisition Strategy, Systems Engineering Plan (SEP) and Program Protection Plan (PPP) to reflect changes for Increment 1 Version 4 through Version 6. - Continue CSRR Increment 1 Version 4 systems engineering development and modernization for the LOS ANGELES, SSBN, VIRGINIA, SSGN, and SEAWOLF Class submarines. - Continue development of platform specific builds of Increment 1 Version 4 Control and Management software for LOS ANGELES, SSBN, VIRGINIA, SSGN, and SEAWOLF Class capabilities. - Continue Multi-purpose Reconfigurable Training System (MRTS) software upgrade for Increment 1 Version 4 CSRR baseline for LOS ANGELES, SSBN, and SSGN Class operator trainer and VIRGINIA Class maintenance trainer. - Continue implementation of Increment 1 Version 4 security upgrades to meet Cybersecurity and multiple certification requirements for General Service (GENSER) and Sensitive Compartmented Information (SCI) for all CSRR platforms. - Continue Federal Information Security Management Act (FISMA) statutory requirement for Cybersecurity compliance and correction of Increment 1 Version 1 - Version 4 Cybersecurity deficiencies. - Continue Supply Chain Risk Management (SCRM) assessment as part of Program Protection Plan revision. - Continue development of the Test and Evaluation Master Plan (TEMP) and all preparations for Increment 1 Version 4 Developmental Test (DT) and Operational Test (OT) events. - Commence contract planning for Control and Management Software contract recompete. - Commence CSRR Increment 1 Version 5 systems engineering development and modernization for the LOS ANGELES, SSBN, VIRGINIA, SSGN, and SEAWOLF Class submarines.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Commence development of platform specific builds of Increment 1 Version 5 Control and Management software for LOS ANGELES, SSBN, VIRGINIA, SSGN, and SEAWOLF Class capabilities.					
FY 2018 Base Plans: - Complete CSRR Increment 1 Version 4 systems engineering development and modernization for the LOS ANGELES, SSBN, VIRGINIA, SSGN, and SEAWOLF Class submarines. - Complete development of platform specific builds of Increment 1 Version 4 Control and Management software for LOS ANGELES, SSBN, VIRGINIA, SSGN, and SEAWOLF Class capabilities. - Complete Multi-purpose Reconfigurable Training System (MRTS) software upgrade for Increment 1 Version 4 CSRR baseline for LOS ANGELES, SSBN, and SSGN Class operator trainer and VIRGINIA Class maintenance trainer. - Complete development of the Test and Evaluation Master Plan (TEMP) and all preparations for Increment 1 Version 4 Developmental Test (DT) and Operational Test (OT) events. - Complete contract planning and award Control and Management Software contract. - Commence/Complete Follow-on Operational Test & Evaluation (FOT&E) of the CSRR Increment 1 Version 4 baseline on the LOS ANGELES, SSBN, VIRGINIA, SSGN, and SEAWOLF Class submarines. - Commence/Complete required Increment 1 Version 4 SSBN Class Emergency Action Message (EAM) certification testing, data analysis and Targeting Change Message (TCM) testing. - Commence/Complete successful Full Fielding Decision for Increment 1 Version 4. - Continue implementation of Increment 1 Version 4 security upgrades to meet Cybersecurity and multiple certification requirements for General Service (GENSER) and Sensitive Compartmented Information (SCI) for all CSRR platforms. - Continue Federal Information Security Management Act (FISMA) statutory requirement for Cybersecurity compliance and correction of Increment 1 Version 1 - Version 4 Cybersecurity deficiencies. - Continue Supply Chain Risk Management (SCRM) assessment as part of Program Protection Plan revision. - Continue CSRR Increment 1 Version 5 systems engineering development and modernization for the LOS ANGELES, SSBN, VIRGINIA, SSGN, and SEAWOLF Class submarines. - Continue development of platform specific builds of Increment 1 Version 5 Control and Management software for LOS ANGELES, SSBN, VIRGINIA, SSGN, and SEAWOLF Class capabilities. - Commence implementation of Increment 1 Version 5 security upgrades to meet Cybersecurity and multiple certification requirements for General Service (GENSER) and Sensitive Compartmented Information (SCI) for all CSRR platforms.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Commence Federal Information Security Management Act (FISMA) statutory requirement for Cybersecurity compliance and correction of Increment 1 Version 5 Cybersecurity deficiencies. - Commence Multi-purpose Reconfigurable Training System (MRTS) software upgrade for Increment 1 Version 5 CSRR baseline for LOS ANGELES, SSBN, and SSGN Class operator trainer and VIRGINIA Class maintenance trainer. ***FY 2018 OCO Plans:*** N/A					
Title: Low Probability of Intercept/Low Probability of Detection (LPI/LPD) ***Articles:*** ***FY 2016 Accomplishments:*** - Previously funded under the Submarine Integrated Antenna System Project (0742)/Advanced High Data Rate (HDR) program/project. ***FY 2017 Plans:*** - Previously funded under the Submarine Integrated Antenna System Project (0742)/Advanced High Data Rate (HDR) program/project. ***FY 2018 Base Plans:*** - Continue/Complete LPI/LPD technology development phase 1. - Commence shore integration of LPI/LPD solution sets to support Department of Defense (DoD) Teleports. - Commence shore integration of LPI/LPD solution sets to support Department of Navy (DoN) Submarine Broadcast Control Authority. - Commence afloat integration of LPI/LPD solution sets on LOS ANGELES, SSBN, VIRGINIA, SSGN and SEAWOLF Class submarines. - Commence Environmental Qualification Testing (EQT). - Commence LPI/LPD Phase 2 Trade Study Development. ***FY 2018 OCO Plans:*** N/A	0.000 -	0.000 -	6.000 -	0.000 -	6.000 -
Title: Link 16 ***Articles:*** ***FY 2016 Accomplishments:***	0.000 -	0.000 -	2.500 -	0.000 -	2.500 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** - Previously funded under the Submarine Integrated Antenna System Project(0742). ***FY 2018 Base Plans:*** - Continue/Complete Link 16 tactical network communications capability Analysis of Alternatives (AoA). - Commence systems engineering development of Link 16 tactical network communications capability. - Commence porting of the Tactical Data Link (TDL) Processor Software to a different processor for integration. - Commence Lab integration of the TDL processor with Multifunctional Information Distribution System (MIDS) into the submarine architecture. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	10.027	10.002	19.494	0.000	19.494

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/3130: *Submarine Communication Equipment*	58.037	64.529	86.204	-	86.204	78.987	85.101	87.120	87.793	Continuing	Continuing
• OPN/2560: *Submarine Supt Equip Prog*	83.472	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	958.736
• OPN/0840: *Sub Periscope, Imaging and Supt Equip Prog*	0.000	154.421	151.240	-	151.240	203.895	244.660	228.294	220.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

Program Milestones: Increment 1 Version 4 Preliminary Design Review (PDR) 1Q FY16, Critical Design Review (CDR) 3Q FY17, Developmental Test (DT) 3Q FY18, Operational Test (OT) 4Q FY18, Fielding Decision 4Q FY18. Increment 1 Version 5 PDR 4Q FY18, CDR 3Q FY19, DT 2Q FY21, OT 3Q FY21, and Fielding Decision 4Q FY21. Increment 1 Version 6 PDR 4Q FY21 and CDR 3Q FY22.
Link 16 Program Milestones: Developmental Test (DT) 1Q FY21, Operational Test (OT) 2Q FY21.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

E. Performance Metrics

FY18 CSRR: Complete successful Full Fielding Decision for Increment 1 Version 4.
FY18 LPI/LPD: Complete Low Probability of Intercept/Low Probability of Detection (LPI/LPD) Technology Development Phase 1.
FY18 Link 16: Complete Link 16 tactical network communications capability Analysis of Alternatives (AoA).

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Multi-Purpose Reconfigurable Training System (MRTS) Development (CSRR)	WR	SSC LANT : Charleston, SC	2.898	1.193	Mar 2016	1.214	Dec 2016	1.332	Dec 2017	-		1.332	Continuing	Continuing	Continuing
Systems Eng/Design Version 4 (CSRR)	WR	NUWC : Newport, RI	9.693	4.098	Jan 2016	4.142	Jan 2017	4.535	Jan 2018	-		4.535	Continuing	Continuing	Continuing
Site Platform Integration/ Certification (CSRR)	WR	NUWC : Newport, RI	12.937	0.130	Jan 2016	0.145	Jan 2017	0.156	Jan 2018	-		0.156	Continuing	Continuing	Continuing
Software Development (CSRR)	TBD	TBD : TBD	0.000	0.000		0.000		2.541	Mar 2018	-		2.541	Continuing	Continuing	Continuing
Software Development (CSRR)	C/CPIF	Lockheed Martin : San Diego, CA	6.555	2.118	Mar 2016	2.338	Mar 2017	0.000		-		0.000	0.000	11.011	11.011
Systems Eng/Integration (LPI/LPD)	WR	NUWC : Newport, RI	0.000	0.000		0.000		2.350	Nov 2017	-		2.350	Continuing	Continuing	Continuing
Design (LPI/LPD)	WR	SSC PAC : San Diego, CA	0.000	0.000		0.000		1.200	Nov 2017	-		1.200	Continuing	Continuing	Continuing
Hardware Development (Link 16)	TBD	TBD : TBD	0.000	0.000		0.000		0.500	Nov 2017	-		0.500	Continuing	Continuing	Continuing
Systems Engineering (Link 16)	WR	NUWC : Newport, RI	0.000	0.000		0.000		0.750	Nov 2017	-		0.750	Continuing	Continuing	Continuing
Site Platform integration/ Certification (Link 16)	WR	NUWC : Newport, RI	0.000	0.000		0.000		0.560	Nov 2017	-		0.560	Continuing	Continuing	Continuing
Software Development (Link 16)	TBD	TBD : TBD	0.000	0.000		0.000		0.420	Nov 2017	-		0.420	Continuing	Continuing	Continuing
Product Development Prior Years	Various	Various : Various	124.155	0.000		0.000		0.000		-		0.000	0.000	124.155	124.155
		Subtotal	156.238	7.539		7.839		14.344		-		14.344	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*	Project (Number/Name) 1411 / *Sub Tact Comm System*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support (CSRR)	WR	NUWC : Newport, RI	3.688	0.192	Nov 2015	0.268	Nov 2016	0.290	Nov 2017	-		0.290	Continuing	Continuing	Continuing
Software Engineering (CSRR)	WR	SSC PAC : San Diego, CA	3.651	0.185	Nov 2015	0.207	Nov 2016	0.248	Nov 2017	-		0.248	Continuing	Continuing	Continuing
Information Security/ Cyber Security (INFOSEC) Certification/Supply Chain Risk Management (SCRM) Assessment (CSRR)	Various	SSC PAC/SSC LANT/NUWC/ MITRE : San Diego, CA/Charleston, SC/ Newport, RI/San Diego	22.841	1.536	Nov 2015	1.076	Nov 2016	1.212	Nov 2017	-		1.212	Continuing	Continuing	Continuing
Integrated Logistics Support (LPI/LPD)	WR	NUWC : Newport, RI	0.000	0.000		0.000		0.650	Nov 2017	-		0.650	Continuing	Continuing	Continuing
Trade Study (LPI/LPD)	WR	MITRE : San Diego, CA	0.000	0.000		0.000		0.500	Nov 2017	-		0.500	0.000	0.500	0.500
Integrated Logistics Support (Link 16)	WR	NUWC : Newport, RI	0.000	0.000		0.000		0.050	Nov 2017	-		0.050	Continuing	Continuing	Continuing
Software Engineering (Link 16)	WR	SSC PAC : San Diego, CA	0.000	0.000		0.000		0.045	Nov 2017	-		0.045	Continuing	Continuing	Continuing
		Subtotal	30.180	1.913		1.551		2.995		-		2.995	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental/ Operational Test and Evaluation (T&E) (CSRR)	WR	COTF, JITC : Various	11.285	0.000		0.020	Nov 2016	0.060	Nov 2017	-		0.060	Continuing	Continuing	Continuing
Test and Evaluation (T&E) (LPI/LPD)	WR	TBD : TBD	0.000	0.000		0.000		0.700	Nov 2017	-		0.700	Continuing	Continuing	Continuing
Developmental/ Operational Test and Evaluation (T&E) (Link 16)	WR	COTF, JITC : Various	0.000	0.000		0.000		0.025	Nov 2017	-		0.025	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604503N / *SSN-688 & Trident Modernization*	Project (Number/Name) 1411 / *Sub Tact Comm System*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			11.285	0.000		0.020		0.785		-		0.785	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support (CSRR)	C/CPFF	CSA : San Diego, CA	10.801	0.575	Dec 2015	0.592	Nov 2016	0.620	Nov 2017	-		0.620	Continuing	Continuing	Continuing
Program Management Support (LPI/LPD)	C/CPFF	CSA : San Diego, CA	0.000	0.000		0.000		0.600	Nov 2017	-		0.600	Continuing	Continuing	Continuing
Program Management Support (Link 16)	C/CPFF	CSA : San Diego, CA	0.000	0.000		0.000		0.150	Nov 2017	-		0.150	Continuing	Continuing	Continuing
Subtotal			10.801	0.575		0.592		1.370		-		1.370	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	208.504	10.027		10.002		19.494		-		19.494	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

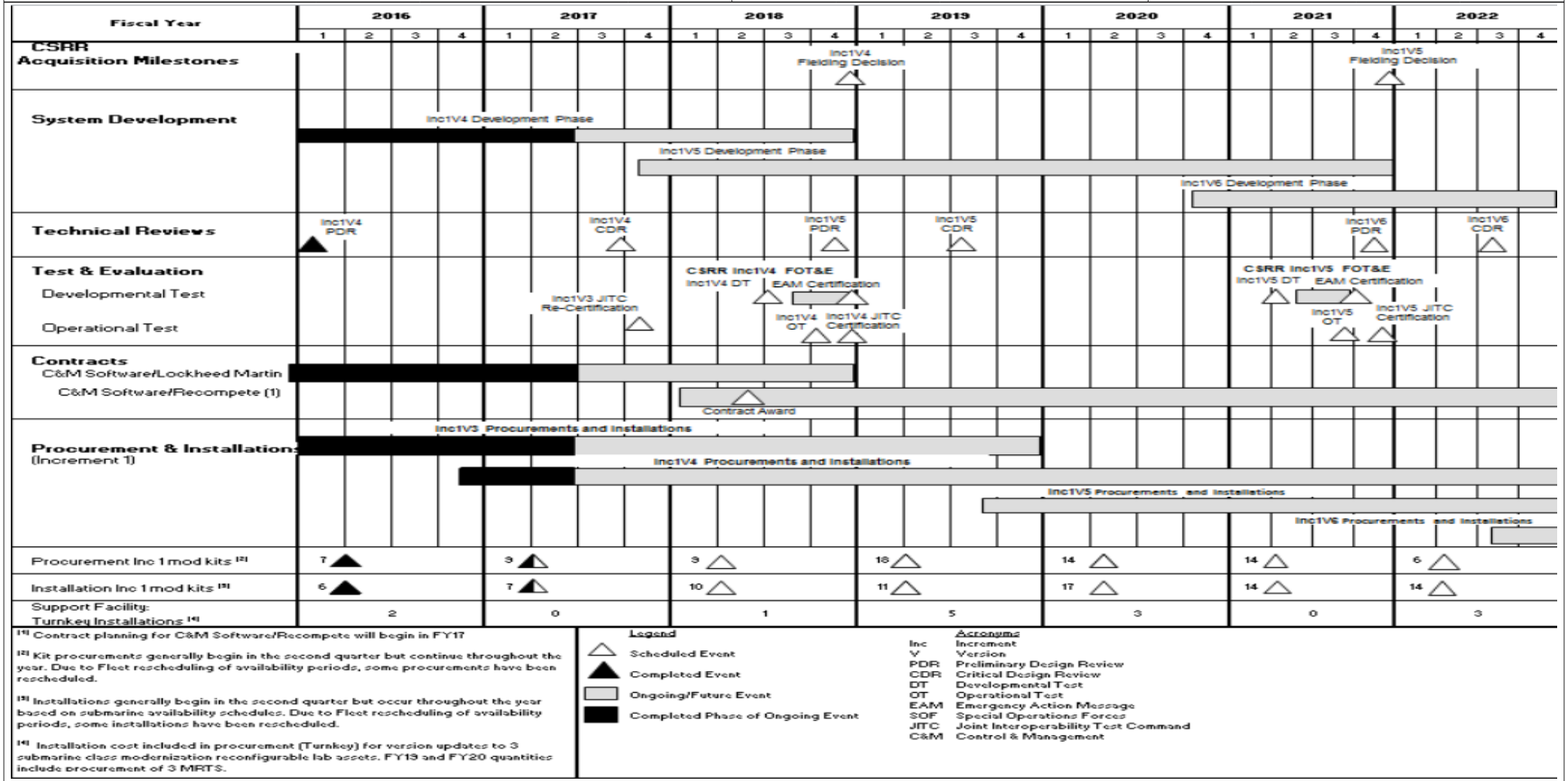
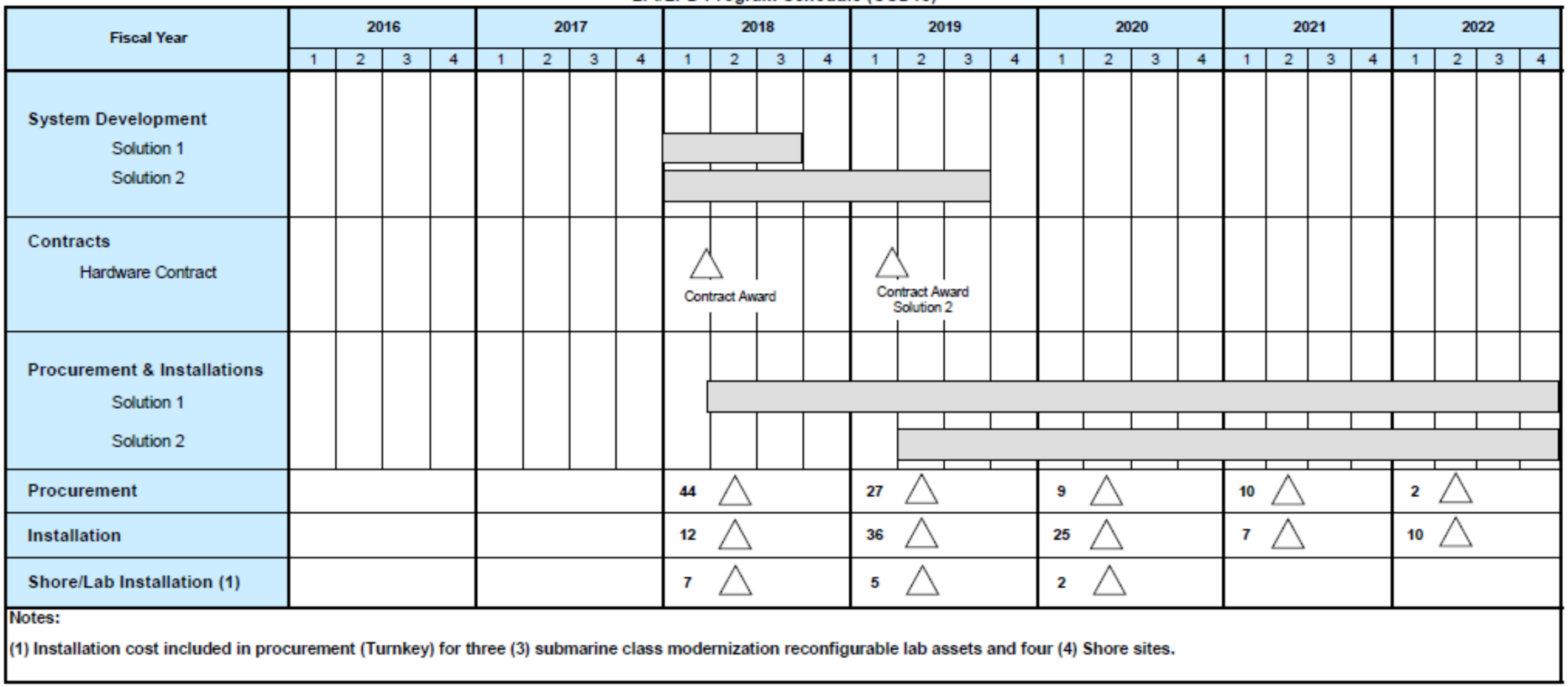


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

LPI/LPD Program Schedule (OSD18)

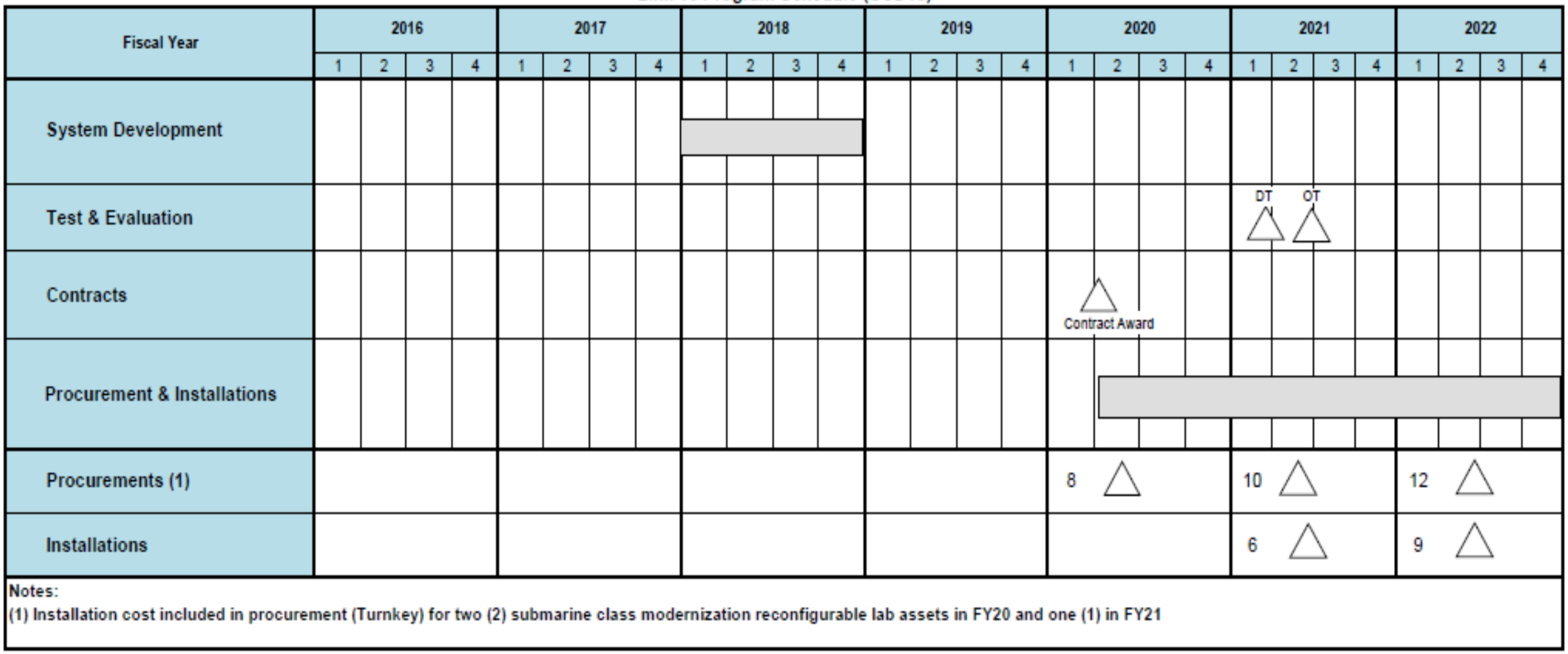


Notes:

(1) Installation cost included in procurement (Turnkey) for three (3) submarine class modernization reconfigurable lab assets and four (4) Shore sites.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

Link 16 Program Schedule (OSD18)



Notes:
(1) Installation cost included in procurement (Turnkey) for two (2) submarine class modernization reconfigurable lab assets in FY20 and one (1) in FY21

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1411				
Fielding Decision (Increment 1 Version 4)	4	2018	4	2018
Fielding Decision (Increment 1 Version 5)	4	2021	4	2021
Technical Reviews (Increment 1 Version 4 Preliminary Design Review (PDR))	1	2016	1	2016
Technical Reviews (Increment 1 Version 4 Critical Design Review (CDR))	3	2017	3	2017
Technical Reviews (Increment 1 Version 5 Preliminary Design Review (PDR))	4	2018	4	2018
Technical Reviews (Increment 1 Version 5 Critical Design Review (CDR))	3	2019	3	2019
Technical Reviews (Increment 1 Version 6 Preliminary Design Review (PDR))	4	2021	4	2021
Technical Reviews (Increment 1 Version 6 Critical Design Review (CDR)	3	2022	3	2022
System Development (Increment 1 Version 4)	1	2016	4	2018
System Development (Increment 1 Version 5)	4	2017	4	2021
System Development (Increment 1 Version 6)	4	2020	4	2022
Contracts (Software---Lockheed Martin)	1	2016	4	2018
Contracts (Software-Follow-on to include planning)	2	2018	4	2022
Emergency Action Message (EAM) Certification (Increment 1 Version 4)	3	2018	4	2018
Emergency Action Message (EAM) Certification (Increment 1 Version 5)	2	2021	3	2021
Increment 1 Version 3 Joint Interoperability Test Command (JITC) Re-Certification	4	2017	4	2017
Increment 1 Version 4 Joint Interoperability Test Command (JITC) Re-Certification	4	2018	4	2018
Increment 1 Version 5 Joint Interoperability Test Command (JITC) Re-Certification	4	2021	4	2021
Developmental Test (DT) (Increment 1 Version 4)	3	2018	3	2018
Operational Test (OT) (Increment 1 Version 4)	4	2018	4	2018
Developmental Test (DT) (Increment 1 Version 5)	2	2021	2	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604503N / *SSN-688 & Trident Modernization*	**Project (Number/Name)** 1411 / *Sub Tact Comm System*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Operational Test (OT) (Increment 1 Version 5)	3	2021	3	2021
Procurement/Installation (Increment 1 Version 3 Modernization Kits)	1	2016	4	2019
Procurement/Installation (Increment 1 Version 4 Modernization Kits)	4	2016	4	2022
Procurement/Installation (Increment 1 Version 5 Modernization Kits)	3	2019	4	2022
Procurement/Installation (Increment 1 Version 6 Modernization Kits)	3	2022	4	2022
System Integration (Low Probability of Intercept/Low Probability of Detection (LPI/LPD) Solution 1)	1	2018	3	2018
System Integration ((LPI/LPD) Solution 2)	1	2018	3	2019
Contract Award ((LPI/LPD) Solution 1)	1	2018	1	2018
Contract Award ((LPI/LPD) Solution 2)	1	2019	1	2019
Procurement/Installation ((LPI/LPD) Solution 1)	2	2018	4	2022
Procurement/Installation ((LPI/LPD) Solution 2)	2	2019	4	2022
System Development (Link 16)	1	2018	4	2018
Developmental Test (DT) (Link 16)	1	2021	1	2021
Operational Test (OT) (Link 16)	2	2021	2	2021
Procurement (Link 16)	2	2020	4	2022
Award (Link 16)	2	2020	2	2020

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604504N *I Air Control*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	99.055	55.947	47.404	75.186	-	75.186	63.645	62.095	55.421	45.525	Continuing	Continuing
0718: *MATCALS*	7.034	1.405	0.314	11.508	-	11.508	6.578	6.854	3.266	2.783	Continuing	Continuing
0993: *Carrier ATC*	78.753	39.538	30.254	32.799	-	32.799	34.411	32.775	29.442	24.727	Continuing	Continuing
1657: *ATC Improvement*	3.046	0.399	0.383	0.413	-	0.413	0.423	0.432	0.442	0.451	Continuing	Continuing
3372: *ATC Systems*	10.222	14.605	16.453	30.466	-	30.466	22.233	22.034	22.271	17.564	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element provides for the development, integration, and testing of Automated Air Traffic Control (ATC) hardware and software required to provide improved flight safety and more reliable all-weather ATC and landing system capabilities at Naval Air Stations (NASs) and Marine Corps Air Stations (MCASs) and Fleet Area Control and Surveillance Facilities (FACSFAC) worldwide. Funded programs are required to upgrade or replace aging ATC and landing system equipment on aircraft, aircraft carriers, amphibious ships, NASs, MCASs and Navy/Marine Corps tactical/expeditionary airfields and remote landing sites. These upgrades include addressing broadened CyberSecurity requirements to remain compliant with software CyberSecurity directives and Information Assurance mandates. Virtual Warfare Center (VWC) supports the Marine Air Ground Task Force (MAGTF) Integrated Air and Missile Defense (IAMD) development

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	57.928	47.404	65.223	-	65.223
Current President's Budget	55.947	47.404	75.186	-	75.186
Total Adjustments	-1.981	0.000	9.963	-	9.963
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.716	0.000			
• SBIR/STTR Transfer	-1.265	0.000			
• Program Adjustments	0.000	0.000	10.427	-	10.427
• Rate/Misc Adjustments	0.000	0.000	-0.464	-	-0.464

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604504N *I Air Control*

Change Summary Explanation

FY 2018 programs increased $10.427 million net for BISOG G/ATOR Mode 5/S, HQMC Aviation Virtual Warfare Center, and EASR/TPX-42 interface and other minor program adjustments.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604504N / *Air Control*	Project (Number/Name) 0718 / *MATCALS*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0718: *MATCALS*	7.034	1.405	0.314	11.508	-	11.508	6.578	6.854	3.266	2.783	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides for continued development, integration, and testing of hardware and software to meet requirements for all-weather operations and improved flight safety of Air Traffic Control (ATC) and Landing Systems at Marine Corps expeditionary airfields. An Acquisition Decision Memorandum from Jan 2005 approved the use of the U.S. Army AN/TPN-31 Air Traffic Navigation, Integration, and Coordination System (ATNAVICS) to fulfill the Air Surveillance and Precision Approach Radar and Control System (ASPARCS) requirement for Jul 2006. The ATNAVICS will replace the legacy ATC Precision Approach Radar (PAR), Airport Surveillance Radar (ASR), and Command and Control Subsystem with a High Mobility Multipurpose Wheeled Vehicle based PAR, ASR and Command and Control Subsystem. The MROC Decision Memorandum 11-2005 of Dec 2004 outlines the evolutionary improvements required by Headquarters Marine Corps. This program works with the Marine ATC Working Group identifying the requirements to implement the P3I and evolutionary product improvements as required for G/ATOR, ATNAVICS, Expeditionary ATC Towers, and Navigational Aids that support Marine Air Traffic Control Detachments.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: ASPARCS Improvements	0.610	0.264	1.608	0.000	1.608
Articles:	-	-	-	-	-
Description: Investigate and resolve obsolescence issues. Perform studies and analyses to implement P3I and other evolutionary improvements. Develop criteria for existing ASPARCS software to achieve Defense Information Infrastructure-Common Operating Environment Level 5 compliance, Information Assurance, Radar Range Extension and Mapping functionality, and enhanced simulation and training into the existing ASPARCS software. Perform Mode 5/S integration, operational functionality study and analyses with AN/TPN-31(V)7 ATNAVICS System.					
FY 2016 Accomplishments: Completed the Air Traffic Control Tower capability improvement Part 1 Engineering Change Proposal (ECP) that recommended which areas; mobility, alternate power source, and identify additional communication (radar, visual, weather, links, Non-Classified Internet Protocol Router & Secret Internet Protocol Router) products that can be upgraded via a Part 2 ECP and provide greater situational awareness for air traffic controllers utilizing these systems. Complete the Part 1 Tactical Air Navigation Modernization ECP for AMTAC.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 0718 / *MATCALS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Develop Part 1 ECP to select and implement the next operating system for AN/TPN-31 (V)7 Air Traffic Navigation, Integration, and Coordination System (ATNAVICS). ***FY 2018 Base Plans:*** *Note - The $1.334 million increase in Air Surveillance and Precision Approach Radar Control System (ASPARCS) Improvements is to initiate a Part I ECP for the AN/TSQ-263 Tactical Terminal Communications System (TTCS). This ECP will resolve known obsolesce issues and reduce deployment setup time. Commence the Part I ECP to develop and test a prototype which modernizes the AN/TSQ-263 TTCS. This ECP will reduce system hardware requirements, improve reliability, address obsolescence issues, and reduce the deployment set-up time. FY18 efforts will include requirements generation, ECP development and initial systems development. ***FY 2018 OCO Plans:*** N/A					
Title: Ground/Air Task Oriented Radar System (G/ATOR) ***Articles:*** ***Description:*** G/ATOR is multi-role, ground-based, expeditionary radar that replaces five legacy radar systems for the Marine Air Ground Task Force. It satisfies the Marine Air Command and Control System and the Ground Counter Fire/ Counter Battery capabilities. The G/ATOR replaces the AN/TPS-63 and complements the AN/TPS-59 long range radar and will provide mobile, multi-functional, three-dimensional surveillance of air breathing targets, detection of cruise missiles and Unmanned Aerial Systems, and the cueing of air defense weapons. The G/ATOR contributes to the extension of Sea Shield/Sea Strike by surveillance and detection of enemy air threats not seen by Navy sensors in the littorals by participating in a cooperative engagement network of sensors and shooters; G/ATOR enables Integrated Fire Control (IFC) and provides engage/fire on remote capability. G/ATOR surveillance coverage with IFC will provide unprecedented reach, volume and precision in the execution of Operational Maneuver From The Sea allowing Naval forces to project and sustain power deep inland. G/ATOR will add Mode 5/S capability, Federal Aviation Administration flight certification requirements, and the ability to integrate with AN/TPN-31(V) ATNAVICS for Precision Approach Radar. This increment of G/ATOR replaces the Marine Corps' AN/TPS-73 radar and the Airport Surveillance Radar portion of the ATNAVICS also known as Air Surveillance and Precision Approach Radar Control System.	0.795 -	0.050 -	8.000 -	0.000 -	8.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 0718 / *MATCALS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Began efforts to achieve Federal Aviation Administration (FAA) flight certification for G/ATOR. Commence Command & Control (C2) and AN/TPN-31(V)7 integration requirements. Continue Mode 5/S development for G/ATOR ***FY 2017 Plans:*** Complete the hardware/software development to achieve FAA flight certification for G/ATOR. Complete the hardware/software requirements for the integration of AN/TPN-31(V)7 Air Traffic Navigation, Integration, and Coordination System (ATNAVICS) and G/ATOR. Complete the Mode 5/S development for G/ATOR. ***FY 2018 Base Plans:*** *Note - Increase from FY17 to FY18 ($8.0M) addresses integration of Mode 5/S capability into G/ATOR. Develop a Test and Evaluation Master Plan that supports the Mode 5/S integration into G/ATOR, includes a Joint Operational Test Approach (JOTA) event required by the Marine Corps and a plan for obtaining DoD AIMS certification for the G/ATOR platform. Commence system testing of the G/ATOR Mode 5/S integration for FAA and DoD AIMS certification and use by all G/ATOR blocks. ***FY 2018 OCO Plans:*** N/A					
Title: Virtual Warfare Center Support ***Articles:*** ***Description:*** Virtual Warfare Center (VWC) Support - This project supports fully interactive operator in the loop simulations in support of the Virtual Warfare Center (VWC) in order to quantify USMC Integrated Air and Missile Defense (IAMD) family of systems performance and how it impacts effectiveness in the IAMD mission area. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** *Note-FY18 $1.9 increase is for Virtual Warfare Center (VWC) Support - This project supports fully interactive operator in the loop simulations at the Virtual Warfare Center (VWC) in order to quantify USMC Integrated Air and Missile Defense (IAMD) family of systems performance and how it impacts effectiveness in the IAMD	0.000 -	0.000 -	1.900 -	0.000 -	1.900 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 0718 / *MATCALS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
mission area. VWC support encompasses a set of integrated fire control (IFC) activities that also includes concept/CONOPS development, family of systems architecture development, and systems engineering/ integration efforts. Conduct Design of Experiment related to Marine Air Ground Task Force (MAGTF) IAMD capabilities. Provide event technical support for four analysis events. Conduct and document analysis results for USMC stakeholders ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.405	0.314	11.508	0.000	11.508

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2815: *MATCALS*	10.011	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	294.376
• RDTEN/0204460M: *G/ATOR*	61.348	83.538	54.645	-	54.645	16.406	14.607	6.700	6.832	Continuing	Continuing
• OPN/2820: *Ashore ATC Equipment/MATCALS*	0.000	12.598	9.556	-	9.556	5.482	5.562	5.770	6.057	Continuing	Continuing

Remarks

Ashore ATC Equipment: FY2017-FY2022 reflects MATCALS portion of Ashore ATC Equipment budget.

D. Acquisition Strategy

An Acquisition Decision Memorandum was signed in Jan 2005 approving the procurement of the Army AN/TPN-31 ATNAVICS to fulfill the Air Surveillance and Precision Approach Radar and Control System requirement for July 2006. The MROC Decision Memorandum 11-2005 of December 2004 outlined the evolutionary improvements required by Headquarters Marine Corps. This program has joined with the Army to implement Pre-Planned Product Improvements and evolutionary product improvements.
G/ATOR will add Mode 5/S capability, FAA flight certification requirements, and the ability to integrate with AN/TPN-31 ATNAVICS for Precision Approach Radar.
The Marine Air Traffic Control (ATC) Working Group identified requirements to address obsolescence issues with ATC Expeditionary Towers. These requirements were validated by APX-25 and a Decision Analysis Study was conducted by NAVAIR 4.10. Funding will address development of expeditionary ATC Tower capability improvements via the Engineering Change Proposal process.

E. Performance Metrics

The MATCALS RDTEN funding will be utilized to continue development of evolutionary improvements envisioned by Headquarters Marine Corps for the MATCALS Family of Systems.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604504N / *Air Control*	Project (Number/Name) 0718 / *MATCALS*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary HDW Develop - ASPARCS Mode 5/S	WR	NAWCAD : Patuxent River, MD	1.230	0.047	Dec 2015	0.107	Dec 2016	0.673	Feb 2018	-		0.673	0.000	2.057	-
Primary HDW Develop - ASPARCS	WR	SPAWARSYSCEN : San Diego, CA	0.453	0.057	Dec 2015	0.000		0.000		-		0.000	0.000	0.510	-
Primary HDW Develop - ASPARCS	C/CPFF	TRANDES : San Diego, CA	1.783	0.000		0.000		0.000		-		0.000	0.000	1.783	1.783
		Subtotal	3.466	0.104		0.107		0.673		-		0.673	0.000	4.350	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development - G/ATOR	WR	NSWC : Dahlgren, VA	0.000	0.595	Jul 2016	0.025	Jan 2017	2.837	Feb 2018	-		2.837	Continuing	Continuing	Continuing
Software Development - ASPARCS	WR	NAWCAD : Patuxent River, MD	3.328	0.229	Dec 2015	0.107	Dec 2016	0.825	Mar 2018	-		0.825	Continuing	Continuing	Continuing
Software Development - Mode 5/S Dev - G/ATOR	SS/CPIF	Telephonics : Huntington Station, NY	0.000	0.000		0.025	Jan 2017	4.818	Mar 2018	-		4.818	Continuing	Continuing	Continuing
Engineering Support - VWC	TBD	NSMA : TBD	0.000	0.000		0.000		1.320	Jan 2018	-		1.320	0.000	1.320	-
Software Development - VWC	C/BA	TBD : TBD	0.000	0.000		0.000		0.580	Jan 2018	-		0.580	0.000	0.580	5.800
		Subtotal	3.328	0.824		0.157		10.380		-		10.380	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD : Patuxent River, MD	0.240	0.277	Dec 2015	0.050	Dec 2016	0.155	Jan 2018	-		0.155	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604504N / *Air Control*	Project (Number/Name) 0718 / *MATCALS*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Managemnt Support	WR	G/ATOR : PEO Land Systems	0.000	0.200	Mar 2016	0.000		0.300	Jan 2018	-		0.300	0.000	0.500	-
		Subtotal	0.240	0.477		0.050		0.455		-		0.455	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	7.034	1.405		0.314		11.508		-		11.508	-	-	-

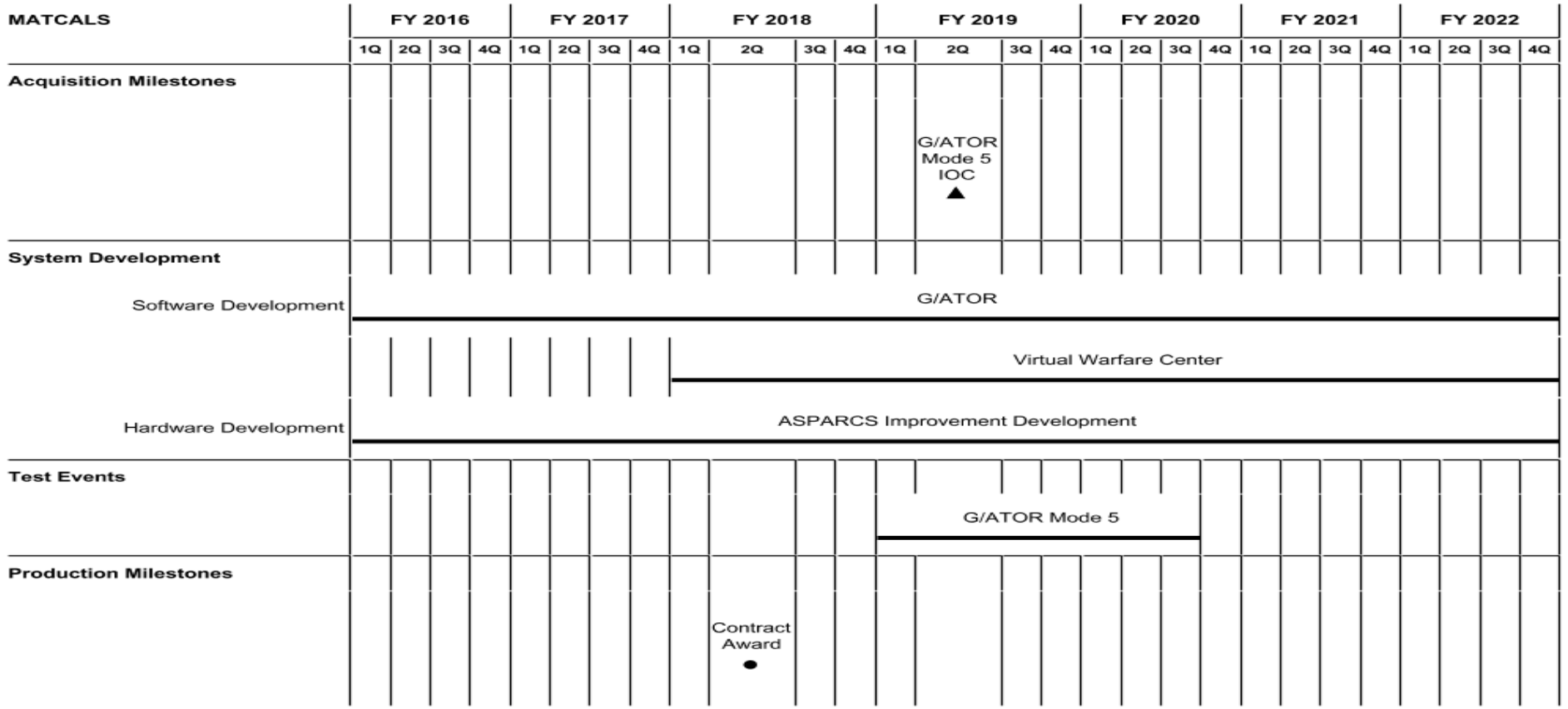
Remarks

MATCALS PU 0718 funding increased from FY17 to FY18 by $9.289 million. Increase addresses integration of Mode 5/S capability into G/ATOR.

The $7.955 million increase in G/ATOR funding from FY17 to FY18 is the initiation of Mode 5/S system development.
The $1.334 million increase in Air Surveillance and Precision Approach Radar Control System (ASPARCS) Improvements is to initiate a Part I ECP for the AN/TSQ-263 Tactical Terminal Communications System (TTCS). This ECP will resolve known obsolesce issues and reduce deployment setup time.

FY18 $1.9 increase is for Virtual Warfare Center (VWC) Support - This project supports fully interactive operator in the loop simulations at the Virtual Warfare Center (VWC) in order to quantify USMC Integrated Air and Missile Defense (IAMD) family of systems performance and how it impacts effectiveness in the IAMD mission area. VWC support encompasses a set of integrated fire control (IFC) activities that also includes concept/CONOPS development, family of systems architecture development, and systems engineering/integration efforts.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 0718 / *MATCALS*



2018OSD - 0604504N - 0718

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 0718 / *MATCALS*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MATCALS				
Acquisition Milestones: G/ATOR Mode 5 IOC	2	2019	2	2019
System Development: Software Development: G/ATOR	1	2016	4	2022
System Development: Software Development: Virtual Warfare Center	1	2018	4	2022
System Development: Hardware Development: ASPARCS Improvements	1	2016	4	2022
Test Events: G/ATOR Mode 5	1	2019	3	2020
Production Milestones: G/ATOR Mode 5 Integration	2	2018	2	2018

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604504N / *Air Control*	Project (Number/Name) 0993 / *Carrier ATC*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0993: *Carrier ATC*	78.753	39.538	30.254	32.799	-	32.799	34.411	32.775	29.442	24.727	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Shipboard Air Traffic Control systems, interfacing with versions of the AN/TPX-42A(V) Direct Altitude and Identity Readout (DAIR), allow shipboard Air Traffic Controllers to identify, marshal, and direct aircraft within a 50 Nautical Mile (NM) radius of the ship. In recent years, the top 25 percent of the AN/SPN-43C frequency band has been reallocated to the Fixed Wireless Access Community prohibiting Air Traffic Control (ATC) Air Search Radar (ASR) operation within 50NM of the coast. Because the Navy requires an air traffic control surveillance radar, this project unit will include engineering efforts to identify requirements and develop the AN/SPN-50(V)1 as an AN/SPN-43C replacement system. In addition, bridging Engineering Change Proposals (ECP) will be required to sustain the AN/SPN-43C capability until the AN/SPN-50(V)1 is completely fielded. Finally, the AN/TPX-42A(V) DAIR continues to undergo several phased upgrades that have resulted in a number of field changes/technology refresh/insertion efforts. System improvements include replacing militarized front-end equipment in the track processor with open architecture Commercial Off the Shelf technology, converting the operational program software to more commonly used and flexible "C" language, providing the "hooks" for potential interface with Mode 5 Identification Friend or Foe, and integrating a flat panel monitor into the controller work station. The development of an ATC common console will reduce operational costs, improve reliability, and provide compatible interfaces and commonality for all ATC workstations. The addition of an embedded trainer within AN/TPX-42A(V) will improve controller training and increase flight safety. Meet CyberSecurity compliance requirements and Information Assurance mandates.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: AN/SPN-50	34.601	25.606	22.759	0.000	22.759
Articles:	2	1	-	-	-
Description: This project funds the development of the AN/SPN-43C replacement program (AN/SPN-50), which was previously funded under AN/SPN-43C and is being broken out for administrative reasons. This system enables Air Traffic Controllers to assure the safe and expeditious movement of air traffic. This capability is an enabler in maintaining launch/recovery cycle times/sortie rates. #3 CVN NARG, #1 ATC NARG priorities.					
FY 2016 Accomplishments: Released RFP and initiated source selection for AN/SPN-50(V)1 contract award. Achieved Material Development Decision. System Requirements Review closed out. Test and Evaluation Master Plan Signed. System Requirement Document signed. Complete Source Selection for AN/SPN-50, award contract. Order two Engineering Development Model (EDM) units and conduct Systems Engineering					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 0993 / *Carrier ATC*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Execution of SPN-50 Engineering & Manufacturing Development (EMD) contract with government as lead system integrator to provide and test 3 units in EMD phase leading to a successful Milestone C in FY-20. Conduct and close out action items for System Requirements Review (SRR)-2, System Functional Review (SFR), Software Specification Review (SSR), and Preliminary Design Review (PDR). Conduct Critical Design Review (CDR). Conduct and close out Integrated Baseline Review (IBR). Complete PEO(T) review of PDR assessment with associated documentation. Systems Integration Lab standup. Delivery of EDM#1. Receipt of initial Original Equipment Manufacturer (OEM) system training and technical documentation. ***FY 2018 Base Plans:*** Execute contract Modification for SPN-50 EMD Contract to add incremental funding. Close out action items from CDR. Conduct Test Readiness Review (TRR). EDM #2/3 delivered. Finalize Hardware and Software design of EDM #3 in Post-CDR Configuration. Develop Post-CDR Software Build. Continuation of Systems Integration Lab standup and commence sub-system testing. Development of OEM training for fleet and test operators. ***FY 2018 OCO Plans:*** N/A					
Title: AN/SPN-43C	1.404	1.263	2.188	0.000	2.188
Articles:	-	-	-	-	-
Description: Funds development of sustainment Engineering Change Proposals (ECP) for the AN/SPN-43C. The sustainment effort will ensure the capabilities provided by the AN/SPN-43C remain available to CVN, LHA and LHD type ships until the replacement system is fielded. ***FY 2016 Accomplishments:*** Continued sustainment ECPs for AN/SPN-43C. ***FY 2017 Plans:*** Continue sustainment ECPs for AN/SPN-43C. ***FY 2018 Base Plans:*** Continue sustainment ECPs for AN/SPN-43C ***FY 2018 OCO Plans:*** N/A					
Title: AN/TPX-42	3.533	3.385	7.852	0.000	7.852
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 0993 / *Carrier ATC*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: This project funds the ongoing modernization of the AN/TPX-42 system through engineering changes and technology refresh, to include CyberSecurity requirements and compliance. Specific engineering changes are: Development of an Air Traffic Control (ATC) Multi-Function Console (MFC) which will reduce operational costs, improve reliability, and provide common hardware for all ATC workstations. Additionally, MFC will provide interfaces for emerging/planned sensors. ***FY 2016 Accomplishments:*** Continued CATCC/DAIR Recorder Replacement ECP; Completed CATCC/DAIR Embedded Trainer ECP; Initiated CATCC/DAIR Embedded Trainer ECP to incorporate ATC final control functions; continued MFC ECP. ***FY 2017 Plans:*** Complete CATCC/DAIR Recorder Replacement ECP; continue CATCC/DAIR Embedded Trainer ECP to incorporate ATC final control functions; continue MFC ECP. ***FY 2018 Base Plans:*** *Note- TPX-42 increase is due to 1) broadened CyberSecurity requirement to remain compliant with software CyberSecurity directives and Information Assurance; and 2) funding provided for TPX-42 hardware and software development so that TPX-42 will interface with EASR sensor. Complete MFC ECP and CATCC/DAIR Embedded Trainer ECP to incorporate ATC final control functions; initiate sustainment ECPs for AN/TPX-42. EASR/TPX-42 Interface Development, and CyberSecurity requirements and compliance. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	39.538	30.254	32.799	0.000	32.799

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2831: *Shipboard Air Traffic Control*	9.346	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	218.271
• OPN/2832: *Automatic Carrier Landing Systems*	21.281	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	136.090
• OPN/2830: *Afloat ATC Equipment*	0.000	33.484	44.611	-	44.611	48.625	49.956	52.644	52.790	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 0993 / *Carrier ATC*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

AN/TPX-42 Voice/Video recorder replacement, Joint Precision Approach and Landing System Interface, Shipboard trainer, and Air Traffic Control (ATC) Console are all anticipated ECPs, with improvements being incorporated into the production of AN/TPX-42 upgrade kits. AN/SPN-50 replacement program will be an ACAT IVT program.

All other projects are non-ACAT upgrades to existing systems. An evolutionary acquisition approach is being used to introduce these technology advancements that either satisfy user requirements, such as all weather operation, or address supportability and cost of ownership problems.

E. Performance Metrics

Award AN/SPN-50(V)1 post-CDR EDM contract 3QFY17. Attain MS C 3QFY20.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604504N / *Air Control*	Project (Number/Name) 0993 / *Carrier ATC*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary HDW Develop-TPX-42	WR	NAWCAD : PAX River, MD	4.259	0.374	Dec 2015	0.360	Dec 2016	0.973	Dec 2017	-		0.973	Continuing	Continuing	Continuing
Primary HDW Develop - SPN-43	WR	NAWCAD : PAX River, MD	3.245	0.474	Dec 2015	0.470	Dec 2016	0.485	Dec 2017	-		0.485	Continuing	Continuing	Continuing
Primary HDW Develop - SPN-50(V)1 Pre-CDR Configuration EDM	C/CPIF	SAAB : Syracuse NY	0.000	25.749	Aug 2016	0.000		0.000		-		0.000	0.000	25.749	25.749
Primary HDW Develop - SPN-50(V)1 Post-CDR Configuration EDM	C/CPIF	SAAB : Syracuse NY	0.000	0.000		15.516	May 2017	8.620	Dec 2017	-		8.620	15.516	39.652	39.652
Prior year Prod Dev no longer funded in the FYDP	Various	Various : TBD	17.902	0.000		0.000		0.000		-		0.000	0.000	17.902	-
Primary HDW EMD	C/CPIF	SAAB : Syracuse NY	0.000	0.000		0.000		5.000	Dec 2017	-		5.000	2.000	7.000	7.000
		Subtotal	25.406	26.597		16.346		15.078		-		15.078	-	-	-

Remarks

2016: Contract award will provide Pre-CDR Configuration EDMs and will provide the contract vehicle for the entire SPN-50 EMD phase. EDMs will be existing production Commercial Off The Shelf (COTS) units that will not meet all SPN-50 requirements. The EDMs will be used for integration and initial DT/environmental testing. PDR & CDR planned in FY16/FY17 will determine modifications required to meet all SPN-50 requirements.
2017: Post-CDR EDM is an exercisable option on the SPN-50 EMD contract. It will include the required modifications to meet SPN-50 requirements, to include hardware redesign, development, and integration & test of above and below deck hardware to increase redundancy to expand operational availability from 94% to 98%.
TPX-42 increase is due to broadened CyberSecurity requirement to remain compliant with software CyberSecurity directives and Information Assurance.
2018 - Primary HDW EMD line added to support all phases of SPN50 Engineering and Development required to meet all system certifications.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development-TPX-42	WR	NAWCAD : PAX River, MD	16.021	1.734	Dec 2015	1.700	Dec 2016	3.050	Dec 2017	-		3.050	Continuing	Continuing	Continuing
Integrated Logistics Support- TPX-42	WR	NAWCAD : PAX River, MD	1.619	0.120	Dec 2015	0.120	Dec 2016	0.220	Dec 2017	-		0.220	Continuing	Continuing	Continuing
Integrated Logistics Support - SPN-43	WR	NAWCAD : PAX River, MD	0.621	0.310	Dec 2015	0.200	Dec 2016	0.224	Dec 2017	-		0.224	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604504N / *Air Control*	Project (Number/Name) 0993 / *Carrier ATC*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support-SPN-50(V)1	WR	NAWCAD : PAX River, MD	0.805	0.700	Dec 2015	0.663	Dec 2016	0.806	Dec 2017	-		0.806	Continuing	Continuing	Continuing
Studies & Analysis-SPN-50(V)1	WR	NAWCAD : PAX River, MD	3.442	0.800	Dec 2015	0.763	Dec 2016	0.800	Dec 2017	-		0.800	Continuing	Continuing	Continuing
Software Development - SPN-50(V)1	WR	NAWCAD : PAX River, MD	3.171	3.841	Dec 2015	3.797	Dec 2016	3.702	Dec 2017	-		3.702	Continuing	Continuing	Continuing
Studies & Analysis-SPN-43	WR	NAWCAD : PAX River, MD	1.989	0.020	Dec 2015	0.020	Dec 2016	0.020	Dec 2017	-		0.020	Continuing	Continuing	Continuing
Studies & Analysis-TPX-42	WR	NAWCAD : PAX River, MD	0.721	0.100	Dec 2015	0.100	Dec 2016	0.500	Dec 2017	-		0.500	Continuing	Continuing	Continuing
Systems Engineering-SPN-50(V)1	WR	NAWCAD : PAX River, MD	2.300	2.911	Dec 2015	2.964	Dec 2016	3.000	Dec 2017	-		3.000	Continuing	Continuing	Continuing
Prior Year Support no longer funded in the FYDP	Various	Various : Various	13.393	0.000		0.000		0.000		-		0.000	0.000	13.393	-
		Subtotal	44.082	10.536		10.327		12.322		-		12.322	-	-	-

Remarks

TPX-42 increase is due to broadened CyberSecurity requirement to remain compliant with software CyberSecurity directives and Information Assurance.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation- TPX-42	WR	NAWCAD : PAX River, MD	2.245	0.500	Dec 2015	0.400	Dec 2016	0.900	Dec 2017	-		0.900	Continuing	Continuing	Continuing
Development Test & Evaluation - SPN-43	WR	NAWCAD : PAX River, MD	0.900	0.600	Dec 2015	0.573	Dec 2016	1.459	Dec 2017	-		1.459	Continuing	Continuing	Continuing
Operational Test & Evaluation-SPN-50(V)1	WR	OPTEVOR : Norfolk, VA	0.500	0.600	Dec 2015	0.903	Dec 2016	1.840	Dec 2017	-		1.840	Continuing	Continuing	Continuing
Prior year T&E no longer funded in the FYDP	Various	Various : Various	1.707	0.000		0.000		0.000		-		0.000	0.000	1.707	-
Develpment Test & Evaluation SPN-50	WR	NAWCAD : PAX River	0.000	0.000		1.000	Dec 2016	0.000		-		0.000	0.000	1.000	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604504N / *Air Control*	Project (Number/Name) 0993 / *Carrier ATC*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	5.352	1.700		2.876		4.199		-		4.199	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	American Electronics, Inc. : California, MD	2.495	0.300	Dec 2015	0.300	Dec 2016	0.500	Dec 2017	-		0.500	1.500	5.095	5.095
Program Management Support	WR	NAWCAD : PAX River, MD	1.178	0.350	Dec 2015	0.350	Dec 2016	0.500	Dec 2017	-		0.500	Continuing	Continuing	Continuing
Travel	WR	NAVAIRHQ : PAX River, MD	0.240	0.055	Oct 2015	0.055	Oct 2016	0.200	Dec 2017	-		0.200	Continuing	Continuing	Continuing
		Subtotal	3.913	0.705		0.705		1.200		-		1.200	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	78.753	39.538		30.254		32.799		-		32.799	-	-	-

Remarks

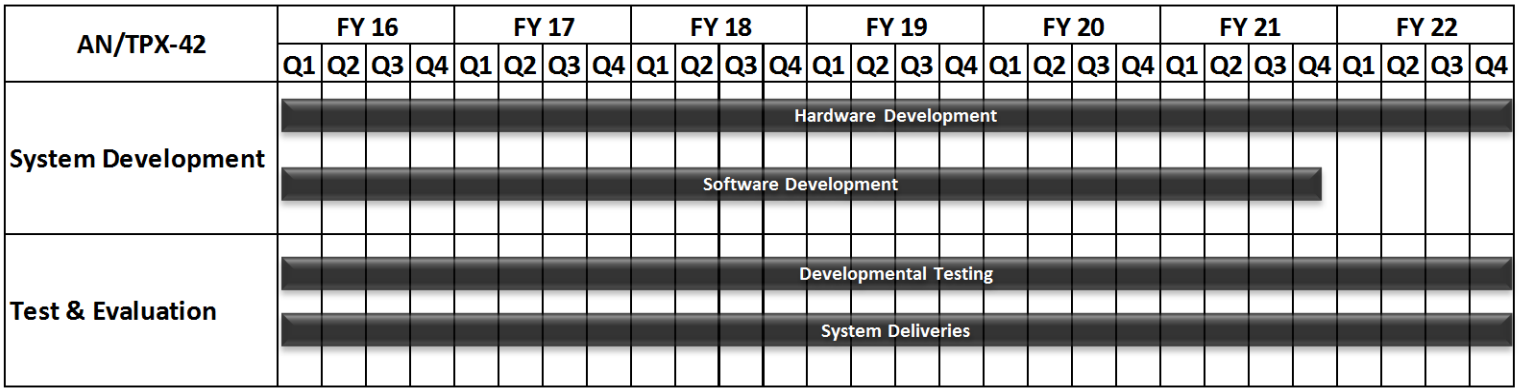
Increase in TPX-42 Primary HDW Development, Software Development, and Developmental T&E FY18-FY22 due to funding Enterprise Air Surveillance Radar (EASR) TPX-42 to interface the EASR sensor to the TPX-42.

Increase in TPX-42 Primary hardware development, software development, and studies and analysis due to funding of CyberSecurity directives and Information Assurance mandates.

Increase in SPN-43C Developmental T&E in FY18 is to test receiver/transmitter ECP which is required to sustain shipboard ATC surveillance capability until SPN-50 is fielded.

Increase in program management support and travel is directly related to the increased efforts in support of SPN-50.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 0993 / *Carrier ATC*



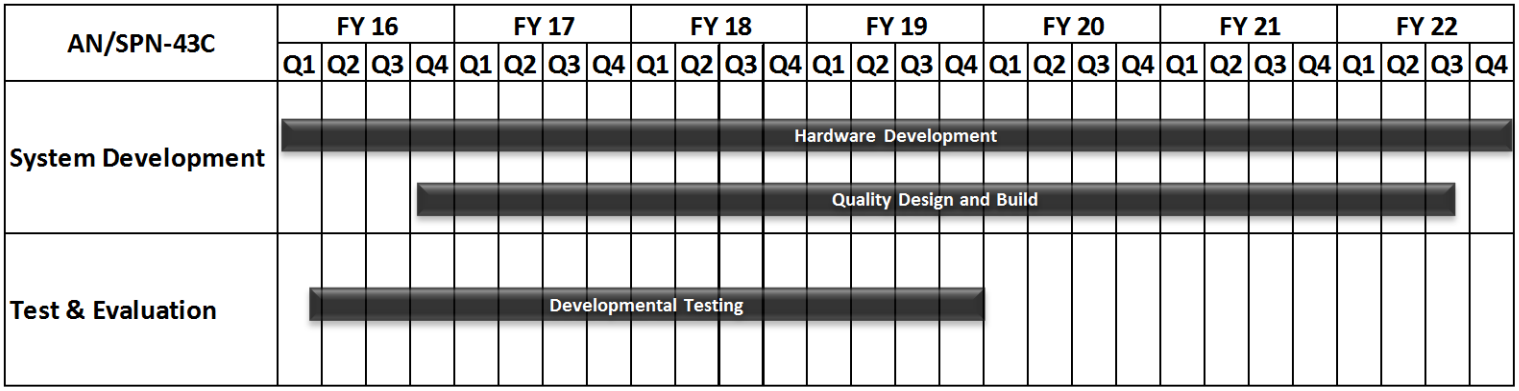


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 0993 / *Carrier ATC*

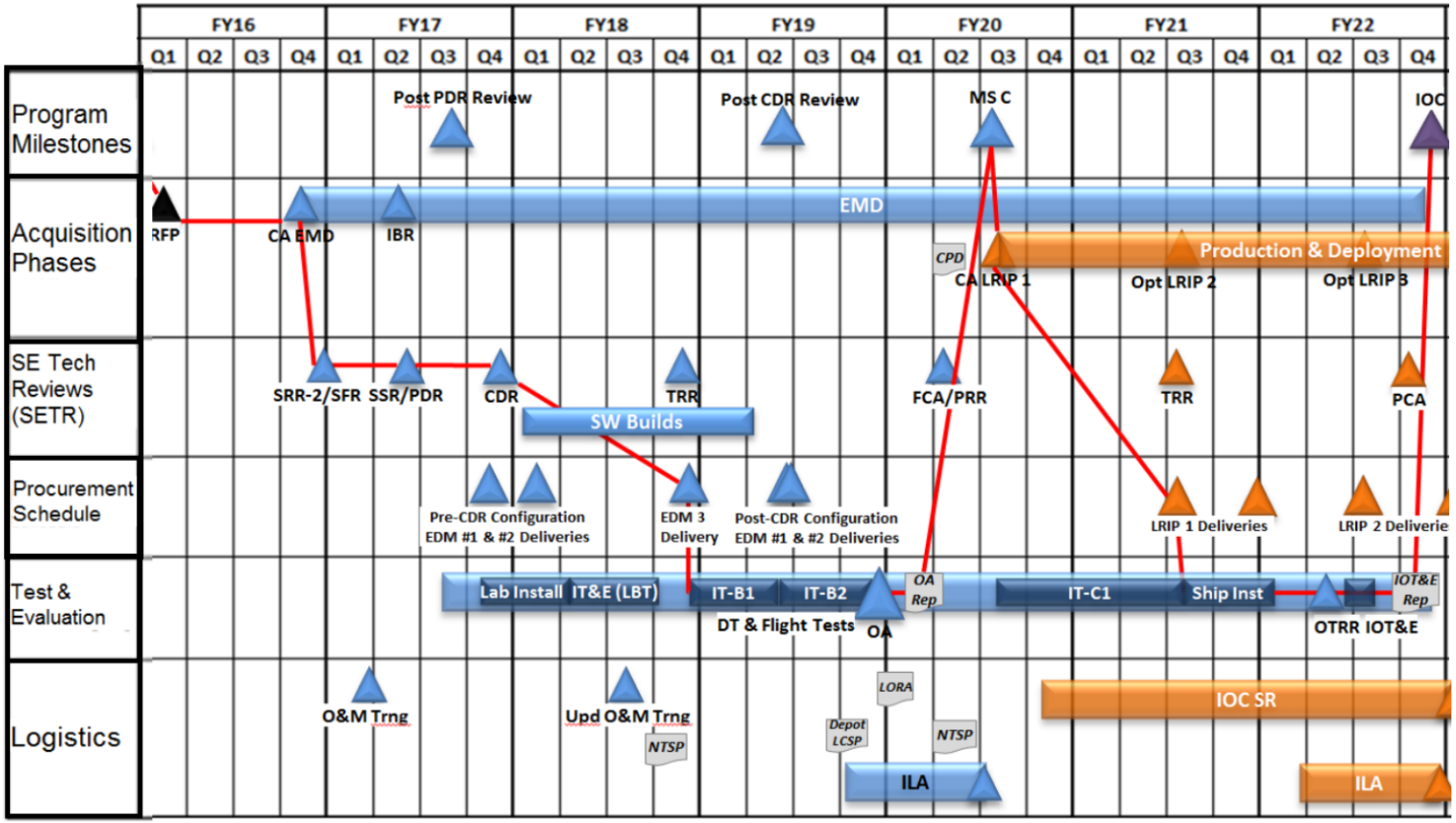


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 0993 / *Carrier ATC*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Carrier ATC				
Acquisition Milestones: Milestones: AN/SPN-50(V)1 Post CDR Review	2	2019	2	2019
Acquisition Milestones: Milestones: AN/SPN-50(V)1 Milestone C	3	2020	3	2020
System Development: Hardware Development: AN/SPN-43C	1	2016	4	2022
System Development: Hardware Development: Quality Design and Build (AN/SPN43C)	4	2016	3	2022
System Development: Hardware Development: AN/TPX-42A(V)	1	2016	4	2022
System Development: Software Development: AN/TPX-42A(V)	1	2016	4	2021
System Development: Reviews: Critical Design Review (CDR) (AN/SPN-50(V)1)	4	2017	4	2017
System Development: Reviews: System Requirement Review (SRR) (AN/SPN-50)	4	2016	4	2016
Page/Group/Row				
Test and Evaluation: Developmental Testing/Operational Testing (AN/SPN-50(V)1)	4	2018	4	2019
Test and Evaluation: Developmental Testing (AN/TPX-42A(V))	1	2016	4	2022
Production Milestones: Developmental Testing (AN/SPN-43C)	1	2016	4	2019
Production Milestones: Contract Awards: (AN/SPN-50(V)1) Pre-CDR EDM Contract Award	4	2016	4	2016
Production Milestones: Contract Awards: (AN/SPN-50(V)1) Post-CDR EDM Contract Award	4	2017	4	2017
Deliveries: Pre-CDR Configuration Prototype Delivery (AN/SPN-50(V)1)	4	2017	4	2017
Deliveries: Post-CDR Configuration Prototype Delivery (AN/SPN-50(V)1)	4	2018	4	2018
Deliveries: System Deliveries (TPX-42A(V))	1	2016	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604504N / *Air Control*	Project (Number/Name) 1657 / *ATC Improvement*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1657: *ATC Improvement*	3.046	0.399	0.383	0.413	-	0.413	0.423	0.432	0.442	0.451	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides for engineering development, integration, adaptation, and testing of new and/or modernized Air Traffic Control (ATC) systems, air navigational aids, landing systems, and ATC communication systems for Naval and Marine Corps Air Stations (NAS/MCAS) and Fleet ATC Systems. These systems are critical to Naval Aviation and provide for safe, efficient air operations. Additionally, the Federal Aviation Administration (FAA) is affecting major modernization of the National Airspace System (NAS). The Navy must maintain compatibility with FAA-developed ATC systems in order to ensure seamless interoperability within the NAS. NAS modernization initiatives in Project 1657 include the Visual Information Display System (VIDS) and follow-on Pre-Planned Product Improvements, with additional RDT&E efforts required for modified commercial-off-the-shelf ATC systems and equipment for modernization and recapitalization of these systems at our NAS, MCAS & Fleet Area Control & Surveillance Facilities (FACSFACs) worldwide.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: NAS MOD VIDS	0.199	0.191	0.210	0.000	0.210
Articles:	-	-	-	-	-
Description: Continue engineering development of pre-planned product improvements for the VIDS and initiate efforts to incorporate VIDS into the FACSFACs. Research display alternatives for Navy ATC systems, and evaluate alternatives for future communication and radar systems.					
FY 2016 Accomplishments: Continued engineering development of Pre-Planned Product Improvements for VIDS to incorporate multiple weather source inputs. Continue Standard Terminal Automation Replacement System and VIDS engineering development for technology insertion. Continued engineering efforts to maintain interoperability with the Federal Aviation Administration's (FAA) next generation air traffic control system.					
FY 2017 Plans: Continue engineering development of Pre-Planned Product Improvements for VIDS to incorporate multiple weather source inputs. Continue Standard Terminal Automation Replacement System and VIDS engineering development for technology insertion. Continue engineering efforts to maintain interoperability with the FAA next generation air traffic control system.					
FY 2018 Base Plans: Continue engineering development of Pre-Planned Product Improvement for VIDS to incorporate multiple weather source inputs. Continue Standard Terminal Automation Replacement System and VIDS engineering					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 1657 / *ATC Improvement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
development for technology insertion. Continue engineering efforts to maintain interoperability with the FAAs next generation air traffic control system. ***FY 2018 OCO Plans:*** N/A					
Title: Fleet ATC Systems ***Articles:*** ***Description:*** Research efforts to determine the best technical approach to integrate various data link and communication system upgrades into Navy/Marine Corps ATC Systems including but not limited to the Digital Airport Surveillance Radar (DASR) and the DoD Advanced Automation Systems (DAAS) into the Fleet Area Control and Surveillance Facilities. Evaluate alternative for future processor/display, sensor and communication systems. ***FY 2016 Accomplishments:*** Continued engineering efforts to maintain interoperability with the FAA. ***FY 2017 Plans:*** Continue engineering efforts to maintain interoperability with the FAAs next generation air traffic control system. Continue evaluation of for future processor/display, sensor and communication systems. ***FY 2018 Base Plans:*** Continue engineering efforts to maintain interoperability with the FAAs next generation air traffic control system. for future processor/display, sensor and communication systems. ***FY 2018 OCO Plans:*** N/A	0.200 -	0.192 -	0.203 -	0.000 -	0.203 -
Accomplishments/Planned Programs Subtotals	0.399	0.383	0.413	0.000	0.413

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2840: *National Air Space System*	25.621	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	382.785
• OPN/2845: *Fleet Air Traffic Control Systems*	8.249	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	211.679

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 1657 / *ATC Improvement*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2820: *Ashore ATC Equipment: NASMOD/Fleet ATC*	0.000	35.498	35.907	-	35.907	36.092	36.716	38.072	39.965	Continuing	Continuing

Remarks

Ashore ATC Equipment: FY2017-FY2022 reflects NASMOD and Fleet ATC portions of Ashore ATC budget.

D. Acquisition Strategy

All projects are non-ACAT upgrades to existing systems. An evolutionary acquisition approach is being used to introduce technology advancements that either satisfy emergent requirements or address supportability and cost of ownership problems.

E. Performance Metrics

The Air Traffic Control (ATC) Improvement continues to research, evaluate and develop displays and other alternatives for Navy ATC, communication and radar systems. Maintain compatibility with the FAAs next generation Air Traffic Control System.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604504N / *Air Control*	Project (Number/Name) 3372 / *ATC Systems*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3372: *ATC Systems*	10.222	14.605	16.453	30.466	-	30.466	22.233	22.034	22.271	17.564	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Landing System Upgrade Program (LSUP) is essential to maintain the United States Navy's capability to perform safe and expeditious aircraft landings aboard CVN and LHA/D vessels. The Navy's Precision Approach and Landing Capability requirements have necessitated Life Cycle Extension upgrades to legacy landing systems, AN/SPN-35, AN/SPN-41 and AN/SPN-46. The LSUP program will modernize technology that was developed and fielded over 30 years ago. It is estimated that without these upgrades, the Navy will lose its Automatic Carrier Landing System capability within 5 years. Meet CyberSecurity requirements and compliance. CyberSecurity requirements have driven increased efforts to remain compliant with software CyberSecurity directives and Information Assurance mandates. Maintaining compliance is critical to retaining an Authority to operate within the Fleet.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: AN/SPN-46 Blk IV Upgrade	14.605	13.397	17.217	0.000	17.217
Articles:	-	-	-	-	-
Description: The AN/SPN-46 Blk IV program targets aging and obsolete components within the carrier landing systems and replaces them with modernized and sustainable components. Blk IV consists of antenna pedestal upgrades, addresses transmitter obsolescence issues, and replacement of obsolete circuit cards, and CyberSecurity					
FY 2016 Accomplishments: Continue hardware and software development of the AN/SPN-46 Blk IV upgrade; continue addressing circuit card and other (part) obsolescence issues.					
FY 2017 Plans: Perform engineering reviews. Begin integration testing of the AN/SPN-46 Blk IV upgrade.					
FY 2018 Base Plans: *Note-Increase from FY17 to FY18 is because the pedestal component of the block upgrade will be fabricated and integrated with the new transmitter and circuit cards, support is required for hardware/software integration and development, and test cost increases required for flight testing of the AN/SPN-46 Blk IV with the F/A-18. Complete development of the Blk IV upgrade. Perform flight testing of the antenna and pedestal.					
FY 2018 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 3372 / *ATC Systems*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: AN/SPN-35 Blk I Upgrade	0.000	3.056	13.249	0.000	13.249
Articles:	-	-	-	-	-
Description: This accomplishment provides for the development, upgrade, redesign, integration, and testing of the AN/SPN-35C Block I upgrade. AN/SPN-35C is the Precision Approach Radar aboard LHA/LHD class ships and is used for Mode III aircraft recovery which ensures the safe approach and landing of AV-8B and various helicopters during adverse weather & night conditions. The AN/SPN-35C Block I upgrade will include engineering efforts to upgrade, redesign, replace, and support, common failure items, obsolete components, analog systems ensuring the their availability to the fleet and extending the service life of the AN/SPN-35C to 2040. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** The AN/SPN-35C Blk I upgrade FY2017 efforts will include the system engineering investigation & analysis, development, upgrade, and redesign of the AN/SPN-35C Pedestal, stabilization, ferrite switch, receiver, and antenna drives. ***FY 2018 Base Plans:*** *Note - AN/SPN-35 Blk I increase between FY17 and FY18 because FY18 is the first full year of the AN/SPN-35 Blk I development and significant engineering events such as CDR. Additionally, there are significant amounts of long lead items that the NAWC, as lead integrator for the AN/SPN-35, will place on order. The AN/SPN-35 is anticipated to be an extensive software change which is expected to also drive cost. Award contracts for Blk I primary and auxiliary equipment development. Continue development of the Blk I upgrade to include ordering of long lead items for the Radar Processing Controller (RPC), the receiver, main I/O processor, and control indicator. Assess and address broadened CyberSecurity requirements to remain compliant with Information Assurance Mandates. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	14.605	16.453	30.466	0.000	30.466

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 3372 / *ATC Systems*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2832: *Automatic Carrier Landing System*	21.281	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	155.476
• OPN/2830: *Afloat ATC Equipment/ACLS*	0.000	24.999	35.942	-	35.942	39.882	40.463	41.317	42.132	Continuing	Continuing

Remarks

Afloat ATC Equipment: FY2017-FY2022 reflects ACLS portion of Afloat ATC Equipment budget.

D. Acquisition Strategy

Landing System Upgrade Program consists of lifecycle extension upgrades to the AN/SPN-35C Precision Approach Radar, AN/SPN-41B Instrument Control Landing Systems and AN/SPN-46 Automatic Carrier Landing Systems which support Air Traffic Control (ATC) operations on board CVN, LHA, and/or LHD-class ships. This effort includes numerous commercial off-the-shelf (COTS) component refresh updates which are urgently needed to sustain the operational viability of these Naval ATC systems supporting fleet air operations for at least the next 15 years until the next generation ATC system is fully implemented. This COTS refresh will include analysis and upgrade of key system components that are critical to overall system operation but have become increasingly difficult to maintain over the past few years. Recent adjustments in the direction and scope of Naval ATC systems have necessitated a re-evaluation of the long-term viability and sustainability of the current Fleet ATC equipment.

The Resources and Requirements Review Board approved the DON Precision Approach and Landing Capability (PALC) Roadmap per Decision Memorandum (DM) Ser: N8B/13U141053 dtd 03 July 2013. This PALC Roadmap re-scoped Joint Precision Approach and Landing System (JPALS) into a single increment and delayed deployment of the JPALS capability to the Fleet. As a result, a requirement to upgrade current SPNs has emerged. Per Enclosure 1 of the above DM, the Landing Systems Upgrade Program will be comprised of the AN/SPN-46, AN/SPN-35C, and AN/SPN-41B and is anticipated that each SPN upgrade will go through separate Material Development Decisions and Milestones.

E. Performance Metrics

Test Readiness Review (TRR) of the AN/SPN-46 Blk IV upgrade.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 3372 / *ATC Systems*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development - AN/SPN-46 Blk IV Upgrade	WR	NAWCAD : Patuxent River, MD	3.461	6.161	Nov 2015	6.914	Nov 2016	7.263	Nov 2017	-		7.263	Continuing	Continuing	Continuing
Ancillary Hardware Development - AN/SPN-46 Blk IV Upgrade	C/CPFF	Sierra Nevada Corp (SNC) : Reno, NV	6.016	6.721	Dec 2015	5.101	Dec 2016	7.120	Dec 2017	-		7.120	Continuing	Continuing	Continuing
Primary Hardware Development - AN/SPN-35 Blk I Upgrade	WR	NAWCAD : Patuxent River, MD	0.000	0.000		2.026	Nov 2016	5.236	Nov 2017	-		5.236	Continuing	Continuing	Continuing
Ancilliary Hardware Development - AN/SPN-35 Blk I Upgrade	TBD	TBD : TBD	0.000	0.000		0.272	Apr 2017	4.083	Nov 2017	-		4.083	Continuing	Continuing	Continuing
		Subtotal	9.477	12.882		14.313		23.702		-		23.702	-	-	-

Remarks

AN/SPN-46 Blk IV increase from FY17 to FY18 is because the pedestal component of the block upgrade will be fabricated and integrated with the new transmitter and circuit cards. AN/SPN-35 Blk I increase between FY17 and FY18 because FY18 is the first full year of the AN/SPN-35 Blk I development. Additionally, there are significant amounts of long lead items that the NAWC, as lead integrator for the AN/SPN-35, will place on order. The AN/SPN-35 is anticipated to be an extensive software change which is expected to also drive cost.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support (ILS)	WR	NAWCAD : Patuxent River, MD	0.200	0.242	Nov 2015	0.495	Nov 2016	1.275	Nov 2017	-		1.275	Continuing	Continuing	Continuing
Systems Engineering Support	WR	NAWCAD : Patuxent River, MD	0.145	0.689	Nov 2015	0.720	Nov 2016	2.050	Nov 2017	-		2.050	Continuing	Continuing	Continuing
		Subtotal	0.345	0.931		1.215		3.325		-		3.325	-	-	-

Remarks

FY18 is the first full year of the AN/SPN-35 Blk I development and contains some significant engineering events for the AN/SPN-35 such as CDR. Additionally for both the AN/SPN-35 Blk I and AN/SPN-46 Blk IV, support is required for hardware/software integration and development.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604504N / *Air Control*	Project (Number/Name) 3372 / *ATC Systems*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/SPN-46 Blk IV Upgrade	WR	NAWCAD : Patuxent River, MD	0.000	0.187	Nov 2015	0.305	Nov 2016	2.312	Nov 2017	-		2.312	Continuing	Continuing	Continuing
		Subtotal	0.000	0.187		0.305		2.312		-		2.312	-	-	-

Remarks

Test costs increase FY17 to FY18 because of the required flight testing of the AN/SPN-46 Blk IV with the F/A-18.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management (PM) Support	WR	NAWCAD : Patuxent River, MD	0.300	0.502	Nov 2015	0.510	Nov 2016	0.777	Nov 2017	-		0.777	Continuing	Continuing	Continuing
PM Suppt - MSS	C/CPAF	TBD : Patuxent River, MD	0.100	0.103	Nov 2015	0.110	Nov 2016	0.350	Nov 2017	-		0.350	Continuing	Continuing	Continuing
		Subtotal	0.400	0.605		0.620		1.127		-		1.127	-	-	-

Remarks

Increase in FY18 for Management Services is due to the AN/SPN-35 Blk I entering the first full year of development.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	10.222	14.605		16.453		30.466		-		30.466	-	-	-

Remarks

Overall project costs increase because FY18 is the first full year of AN/SPN-35 Blk I development, which is occurring simultaneously with the continued development and testing of the AN/SPN-46 Blk IV.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 3372 / *ATC Systems*

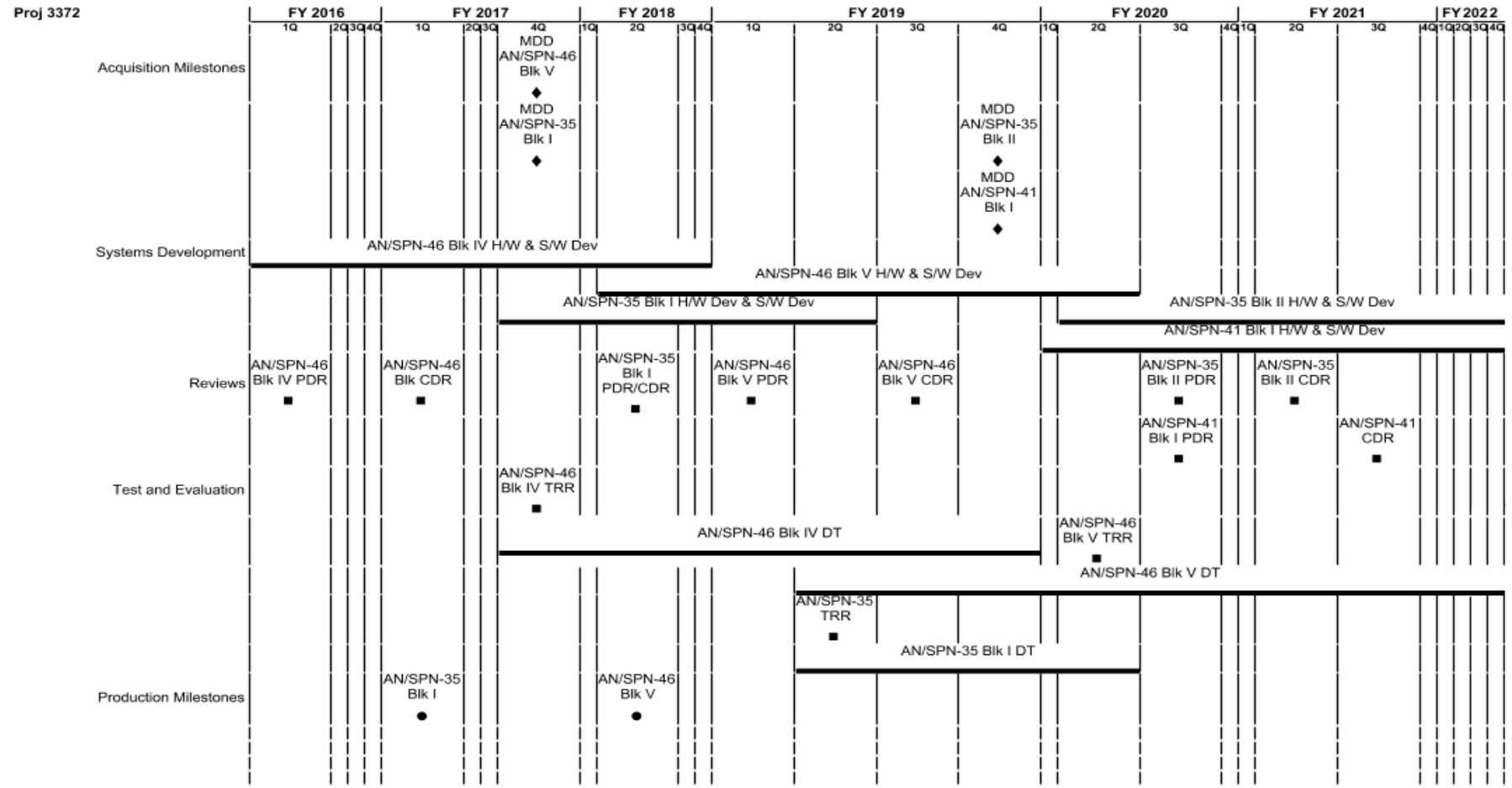


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 3372 / *ATC Systems*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3372				
Acquisition Milestones: MDD AN/SPN-46 Blk V	4	2017	4	2017
Acquisition Milestones: MDD AN/SPN-35 Blk I	4	2017	4	2017
Acquisition Milestones: MDD AN/SPN-35 Blk II	4	2019	4	2019
Acquisition Milestones: MDD AN/SPN-41 Blk I	4	2019	4	2019
Systems Development: AN/SPN-46 Blk IV H/W and S/W Dev	1	2016	4	2018
Systems Development: AN/SPN-46 Blk V H/W and S/W Dev	2	2018	2	2020
Systems Development: AN/SPN-35 Blk I H/W and S/W Dev	4	2017	2	2019
Systems Development: AN/SPN-35 Blk II H/W and S/W Dev	2	2020	4	2022
Systems Development: AN/SPN-41 Blk I H/W and S/W Dev	1	2020	4	2022
Reviews: AN/SPN-46 Blk IV Preliminary Design Review (PDR)	1	2016	1	2016
Reviews: AN/SPN-46 Blk IV Critical Design Review (CDR)	1	2017	1	2017
Reviews: AN/SPN-46 Blk V Preliminary Design Review (PDR)	1	2019	1	2019
Reviews: AN/SPN-46 Blk V Critical Design Review (CDR)	3	2019	3	2019
Reviews: AN/SPN-35 Blk I Critical Design Review (CDR)	2	2018	2	2018
Reviews: AN/SPN-35 Blk II Preliminary Design Review (PDR)	3	2020	3	2020
Reviews: An/SPN-35 Blk II Critical Design Review (CDR)	2	2021	2	2021
Reviews: AN/SPN-41 Blk I Preliminary Design Review (PDR)	3	2020	3	2020
Reviews: AN/SPN-41 Blk I Critical Design Review (CDR)	3	2021	3	2021
Test and Evaluation: An/SPN-46 Blk IV Test Readiness Review (TRR)	4	2017	4	2017
Test and Evaluation: AN/SPN-46 Blk IV Development Testing (DT)	4	2017	4	2019
Test and Evaluation: AN/SPN-46 Blk V Test Readiness Review (TRR)	2	2020	2	2020
Test and Evaluation: AN/SPN-46 Blk V Development Testing (DT)	2	2019	4	2022

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604504N / *Air Control*	**Project (Number/Name)** 3372 / *ATC Systems*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test and Evaluation: AN/SPN-35 Blk I Test Readiness Review (TRR)	2	2019	2	2019
Test and Evaluation: AN/SPN-35 Blk I Development Testing (DT)	2	2019	2	2020
Production Milestones: Contract Award AN/SPN-46 BLK V	2	2018	2	2018
Production Milestones: Contract Award AN/SPN-35 Blk I	1	2017	1	2017

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604512N *I Shipboard Aviation Systems*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	671.395	117.401	112.158	177.926	-	177.926	204.354	98.549	44.861	13.592	Continuing	Continuing
2232: *CV/CVN Launch and Recover*	671.395	117.401	112.158	177.926	-	177.926	204.354	98.549	44.861	13.592	Continuing	Continuing

A. Mission Description and Budget Item Justification

CV Launch & Recovery System - This Navy unique project addresses the System Development and Demonstration (SDD) of all systems required to recover and launch Navy/Marine Corps Aircraft (Fixed/Rotary Wing and Vertical/Short Take Off and Landing) operating aboard aircraft carriers, amphibious assault ships and air capable ships. This program element includes the following:

(1) Advanced Arresting Gear (AAG)
(2) Aircraft Launch & Recovery Equipment Modernization
(3) Aircraft Launch and Recovery Equipment Service Life Management program

This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	120.217	112.158	45.880	-	45.880
Current President's Budget	117.401	112.158	177.926	-	177.926
Total Adjustments	-2.816	0.000	132.046	-	132.046
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.816	0.000			
• Program Adjustments	0.000	0.000	131.274	-	131.274
• Rate/Misc Adjustments	0.000	0.000	0.772	-	0.772

Change Summary Explanation

Cost/Summary:

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604512N *I Shipboard Aviation Systems*

FY 2018 increased $132.046 million for Advanced Arresting Gear (AAG) System Development and Demonstration (SDD) Completion to support SDD delays resulting from technical failures during test and for revised requirements and program executability to complete remaining aircraft recovery bulletins (ARB)s for the entire air wing to support CVN 78's Initial Operational Test and Evaluation (IOT&E) period.

Schedule:
AAG: Updated the AAG schedule to move Milestone C from 3rd quarter FY 2018 to 4th quarter FY 2020; SDD end date moved from 4th quarter FY 2017 to 4th quarter FY2020; Technical Readiness Review 3 (TRR3) moved from 1st quarter FY 2016 to 4th quarter FY 2016; Independent Logistics Assessment (ILA) moved from 4th quarter FY 2017 to 2nd quarter FY 2020; Jet Car Test Site (JCTS) Test end date moved from 2nd quarter FY 2017 to 2nd quarter FY 2019; Environmental Qualification Testing (EQT) end date moved from 3rd quarter FY 2016 to 3rd quarter FY 2020; Runway Arrested Landing Site (RALS) testing end date moved from 4th quarter FY 2017 to 1st quarter FY 2020; Shipboard Test end date moved from 1st quarter FY 2019 to 4th quarter FY 2019; Integrated Test & Evaluation (IT&E) start date moved from 1st quarter FY 2017 to 4th quarter FY 2018 and the end date moved to 4th quarter FY 2022; Jet Car Test Site (JCTS) Technical Evaluation moved from 2nd quarter FY 2017 to 2nd quarter FY 2019; Runway Arrested Landing Site (RALS) Technical Evaluation moved from 1st quarter FY 2018 to 1st quarter FY 2020.

Technical: Not applicable

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604512N / *Shipboard Aviation Systems*	Project (Number/Name) 2232 / *CV/CVN Launch and Recover*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2232: *CV/CVN Launch and Recover*	671.395	117.401	112.158	177.926	-	177.926	204.354	98.549	44.861	13.592	Continuing	Continuing
Quantity of RDT&E Articles	1	2	4	2	-	2	-	-	-	-		

Note

PY article is Jet Car Track Site. FY16 Articles: Due to higher Aircraft Launch & Recovery Equipment (ALRE) program priorities, the test articles were shifted one year to the right. Service Life Management Program (SLMP) test articles refer to actual units (there are two units per ship set).

A. Mission Description and Budget Item Justification

This Navy unique project addresses the System Development and Demonstration (SDD) of all systems required to recover and launch Navy/Marine Corps Aircraft (Fixed/Rotary Wing and Vertical/Short Take-Off and Landing) operating aboard aircraft carriers (CVN), amphibious assault ships and air capable ships. This program includes the following systems under Project 2232, including the funding of production representative models for:

(1) Advanced Arresting Gear (AAG): The AAG program will design, develop, test and field an aircraft arrestment system to replace the legacy Mark 7 arresting gear. AAG systems will be installed on all new construction aircraft carriers. AAG will provide the U.S. Navy with improved operational capability, while reducing operating and support costs. The AAG system will recover all existing and projected carrier based tail hook-equipped air vehicles well into the 21st century. The AAG Program's SDD phase test article consists of a single wire configured aircraft arresting system, which includes associated hardware and software needed to conduct system integrated testing by arresting both dead-loads and aircraft.

(2) Aircraft Launch & Recovery Equipment (ALRE) Modernization: ALRE Modernization encompasses efforts required to ensure continued functional performance, operational relevance, and cybersecurity accreditation for all product lines across the ALRE program. This includes efforts required to resolve emerging obsolescence issues (both hardware and software), implement fleet driven operational capability upgrades, and comply with cybersecurity requirements and computer task order requirements for security threat mitigation. Effort includes:

(a) Improved Manually Operated Visual Landing Aid System (IMOVLAS): IMOVLAS will be the manual backup for Improved Fresnel Lens Optical Landing System (IFLOLS), which is the primary carrier Visual Landing Aid. IMOVLAS will be used in high sea states or if IFLOLS is inoperable, and will mirror current IFLOLS configuration in size & display. Two production representative models will be procured in FY 2016; the models will be utilized for environmental and developmental testing.

(3) Aircraft Launch & Recovery Equipment (ALRE) Service Life Management Program (SLMP): The ALRE SLMP for Launcher and Recovery is required to sustain carrier aviation operations of higher energy aircraft launch and recoveries that are increasing loads on the ALRE systems, and that are affecting availability, maintainability and cost. This program will consist of service life assessment and extension initiatives and will establish the design foundation (structural, reliability, and maintainability analyses), permit appropriate assessment, track and focus design changes where most needed. Four SLMP prototypes will be procured in FY 2017 and two in FY 2018.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Advanced Arresting Gear (AAG)	106.768	102.033	170.526	0.000	170.526
Articles:	-	-	-	-	-

Description: The Advanced Arresting Gear (AAG) program is designing, developing, testing and fielding an aircraft arrestment system to replace the legacy Mark 7 arresting gear.

FY 2016 Accomplishments:
Continued SDD execution of system integrated performance testing at the JCTS utilizing deadloads. Completed AAG hardware and software installations and AAG system commissioning at the RALS test facility. Commenced Aircraft Compatibility Testing (ACT) at RALS. Continued AAG component EQ testing. Completed CVN 78 PCU crew training for AAG maintainers and operators who will participate in shipboard testing and system turnover to Navy. Continued development of AAG logistics products and technical documentation.

FY 2017 Plans:
Continue SDD execution of system integrated performance testing at the JCTS, ACT at RALS and continued development of AAG shipboard system/flight deck certification products (recovery bulletins for F/A-18 variants, and E-2/C-2) and logistics products (e.g. technical manuals and PCU courseware). Continue developing formal curriculum for fleet operations and maintenance training. Provide interim training for crews until formal curriculum is completed and approved. Conduct component shock testing, EQT hardware refurbishment and reliability growth testing to achieve fleet operational requirements and maintain test unit cycles above shipboard cycles.

FY 2018 Base Plans:
***Note: The increase to FY 2018 above PB 2017 baseline is for Advanced Arresting Gear (AAG) System Development and Demonstration (SDD) Completion to support SDD delays resulting from technical failures during test and for revised requirements and program executability to complete remaining aircraft recovery bulletins (ARB)s for the entire air wing to support CVN 78's Initial Operational Test and Evaluation (IOT&E) period.

Continue execution of SDD integrated system performance testing and requirements verification at JCTS and during ACT at RALS. Develop and deliver additional AAG shipboard system/flight deck certification products (expanded recovery bulletins for F/A-18 variants). Conduct high cycle system testing. Continue development of AAG logistics products (e.g. technical manuals and training products). Continue developing formal curriculum for fleet operations and maintenance training. Provide interim training for crews until formal curriculum is completed and approved. Continue AAG land-based testing at JCTS using deadloads for development of the barricade

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
ARB, correction of deficiency testing, EQT, EQT hardware refurbishment, and component shock testing to achieve fleet operational requirements and maintain test unit cycles above shipboard cycles. ***FY 2018 OCO Plans:*** N/A					
Title: Aircraft Launch & Recovery Equipment Modernization ***Articles:*** ***Description:*** Improved Manually Operated Visual Landing Aid System (IMOVLAS) to improve carrier aviation operations. ***FY 2016 Accomplishments:*** IMOVLAS - Conducted the Systems Requirements Review (SRR), Preliminary Design Review (PDR) and manufactured two production representative models. ***FY 2017 Plans:*** IMOVLAS - Conduct Critical Design Review (CDR) and Test Readiness Review (TRR). ***FY 2018 Base Plans:*** IMOVLAS - Continue and complete Integrated Testing (IT). ***FY 2018 OCO Plans:*** N/A	1.241 2	1.722 -	0.575 -	0.000 -	0.575 -
Title: Aircraft Launch & Recovery Equipment (ALRE) Service Life Management Program (SLMP) ***Articles:*** ***Description:*** ALRE SLMP analyzes launch and recovery equipment to determine feasible fielded equipment improvements. ***FY 2016 Accomplishments:*** Completed the design, development and testing of MARK 7 components and subcomponents. ***FY 2017 Plans:*** Award Crosshead and Fixed Sheave contracts and procure four Crosshead and Fixed Sheave prototypes. Continue analysis of the launch and recovery equipment. ***FY 2018 Base Plans:***	9.392 -	8.403 4	6.825 2	0.000 -	6.825 2

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Install and test Crosshead and Fixed Sheave prototypes. Award Main Engine Cylinder contract and procure 2 Main Engine Cylinder prototypes. Continue analysis, design, development and testing of Mark 7, C-13 and Recovery Assist, Securing and Traversing (RAST) components and subcomponents. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	117.401	112.158	177.926	0.000	177.926

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/4213: *Aircraft Launch & Recovery Equipment-Aircraft Launch & Recovery Equipment*	87.643	82.179	63.695	-	63.695	65.105	77.503	73.937	74.562	Continuing	Continuing
• SCN/2001: *Carrier Replacement Program*	2,555.689	2,662.567	4,461.772	-	4,461.772	1,576.966	2,234.571	2,966.013	2,351.884	2,326.440	39,854.130
• OPN/4217: *Advanced Arresting Gear*	0.000	0.000	10.900	-	10.900	11.200	4.800	3.200	2.522	284.100	316.722

Remarks

OPN 4213 includes a portion of line item funding for Aircraft Launch & Recovery Equipment.

D. Acquisition Strategy

Advanced Arresting Gear (AAG): The Navy competitively awarded two Cost Plus Fixed Fee Technical Development phase contracts to develop the AAG system. Upon completion of the Preliminary Design and Integrated Baseline reviews, the Navy awarded a single Cost Plus Award Fee option to General Atomics for the System Development and Demonstration (SDD) phase to develop and demonstrate a production representative AAG at the NAVAIR Lakehurst Jet Car Track Site and Runway Arrested Landing Site. Continuing development on the SDD contract awarded in 2004.

Aircraft Launch & Recovery Equipment Modernization:
Improved Manually Operated Visual Landing Aid System (IMOVLAS): The Navy will develop IMOVLAS using commercial equipment racks, processors and Light Emitting Diodes (LEDs).

Aircraft Launch & Recovery Equipment Service Life Management Program (SLMP): This program will consist of Service Life Assessment and Extension initiatives and will establish the design foundation (structural, reliability and maintainability analyses), permit appropriate assessment, track and focus design changes where most needed.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

E. Performance Metrics

Advanced Arresting Gear (AAG) will complete System Development and Demonstration and Integrated testing at Jet Car Track Site and Runway Arrested Landing Site. AAG will demonstrate its key performance parameters and readiness for operational test.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604512N / *Shipboard Aviation Systems*	Project (Number/Name) 2232 / *CV/CVN Launch and Recover*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary HW Dev-AAG	C/CPAF	Gen Atomics : San Diego, CA	472.268	75.462	Dec 2015	65.160	Dec 2016	96.769	Dec 2017	-		96.769	23.709	733.368	733.368
Primary HW Dev-AAG	WR	NAWCAD : Lakehurst, NJ	35.572	11.340	Nov 2015	12.387	Nov 2016	32.744	Nov 2017	-		32.744	Continuing	Continuing	Continuing
Primary HW Dev - AAG	C/CPAF	ESL : Cranston, RI	0.000	2.000	Jan 2017	2.700	May 2017	3.531	Dec 2017	-		3.531	2.714	10.945	10.945
System Eng-AAG	WR	NAWCAD : Lakehurst, NJ	23.798	2.431	Nov 2015	2.649	Nov 2016	8.706	Nov 2017	-		8.706	Continuing	Continuing	Continuing
Training Development - AAG	WR	NAWCAD : Lakehurst, NJ	0.000	0.173	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Primary HW Dev-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	1.070	0.920	Nov 2015	1.148	Nov 2016	0.211	Nov 2017	-		0.211	Continuing	Continuing	Continuing
System Eng-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	0.368	0.146	Nov 2015	0.140	Nov 2016	0.069	Nov 2017	-		0.069	Continuing	Continuing	Continuing
Primary HW Dev-SLMP	WR	NAWCAD : Lakehurst, NJ	10.264	2.341	Nov 2015	3.668	Nov 2016	1.173	Nov 2017	-		1.173	Continuing	Continuing	Continuing
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	52.975	0.000		0.000		0.000		-		0.000	0.000	52.975	-
		Subtotal	596.315	94.813		87.852		143.203		-		143.203	-	-	-

Remarks

Note: In FY2008, $1.05M (10.5%) in Award Fees were paid out of the $10M Award Fee Pool; the remaining funding was applied to the General Atomics contract. The contractor General Atomics, San Diego, CA has waived all remaining Award Fees.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ILS-AAG	WR	NAWCAD : Lakehurst, NJ	14.370	2.283	Nov 2015	3.170	Nov 2016	5.963	Nov 2017	-		5.963	Continuing	Continuing	Continuing
ILS-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	0.128	0.100	Nov 2015	0.200	Nov 2016	0.110	Nov 2017	-		0.110	Continuing	Continuing	Continuing
Studies & Analysis-SLMP	WR	NAWCAD : Lakehurst, NJ	7.544	3.545	Nov 2015	2.140	Nov 2016	3.684	Nov 2017	-		3.684	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604512N / *Shipboard Aviation Systems*	Project (Number/Name) 2232 / *CV/CVN Launch and Recover*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	1.741	0.000		0.000		0.000		-		0.000	0.000	1.741	-
		Subtotal	23.783	5.928		5.510		9.757		-		9.757	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Dev Test & Eval-AAG	WR	NAWCAD : Lakehurst, NJ	37.085	12.543	Nov 2015	15.335	Nov 2016	22.167	Nov 2017	-		22.167	Continuing	Continuing	Continuing
Operational T&E-AAG	WR	Various : Various	2.082	0.207	Dec 2015	0.300	Nov 2016	0.306	Nov 2017	-		0.306	Continuing	Continuing	Continuing
Integrated Testing-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	0.000	0.075	Nov 2015	0.234	Nov 2016	0.185	Nov 2017	-		0.185	Continuing	Continuing	Continuing
Materials/Validation Testing-SLMP	WR	NAWCAD : Lakehurst, NJ	6.543	3.506	Nov 2015	2.595	Nov 2016	1.968	Nov 2017	-		1.968	Continuing	Continuing	Continuing
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	3.570	0.000		0.000		0.000		-		0.000	0.000	3.570	-
		Subtotal	49.280	16.331		18.464		24.626		-		24.626	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prgm Mgmt Supt	C/CPFF	Sierra : California, MD	1.454	0.289	Dec 2015	0.295	Dec 2016	0.300	Dec 2017	-		0.300	1.003	3.341	3.341
Travel	Reqn	NAVAIR : Patuxent River, MD	0.428	0.040	Oct 2015	0.037	Oct 2016	0.040	Oct 2017	-		0.040	Continuing	Continuing	Continuing
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	0.135	0.000		0.000		0.000		-		0.000	0.000	0.135	-
		Subtotal	2.017	0.329		0.332		0.340		-		0.340	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604512N / *Shipboard Aviation Systems*	Project (Number/Name) 2232 / *CV/CVN Launch and Recover*	

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	671.395	117.401		112.158		177.926		-		177.926	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

ALRE Modernization Schedule

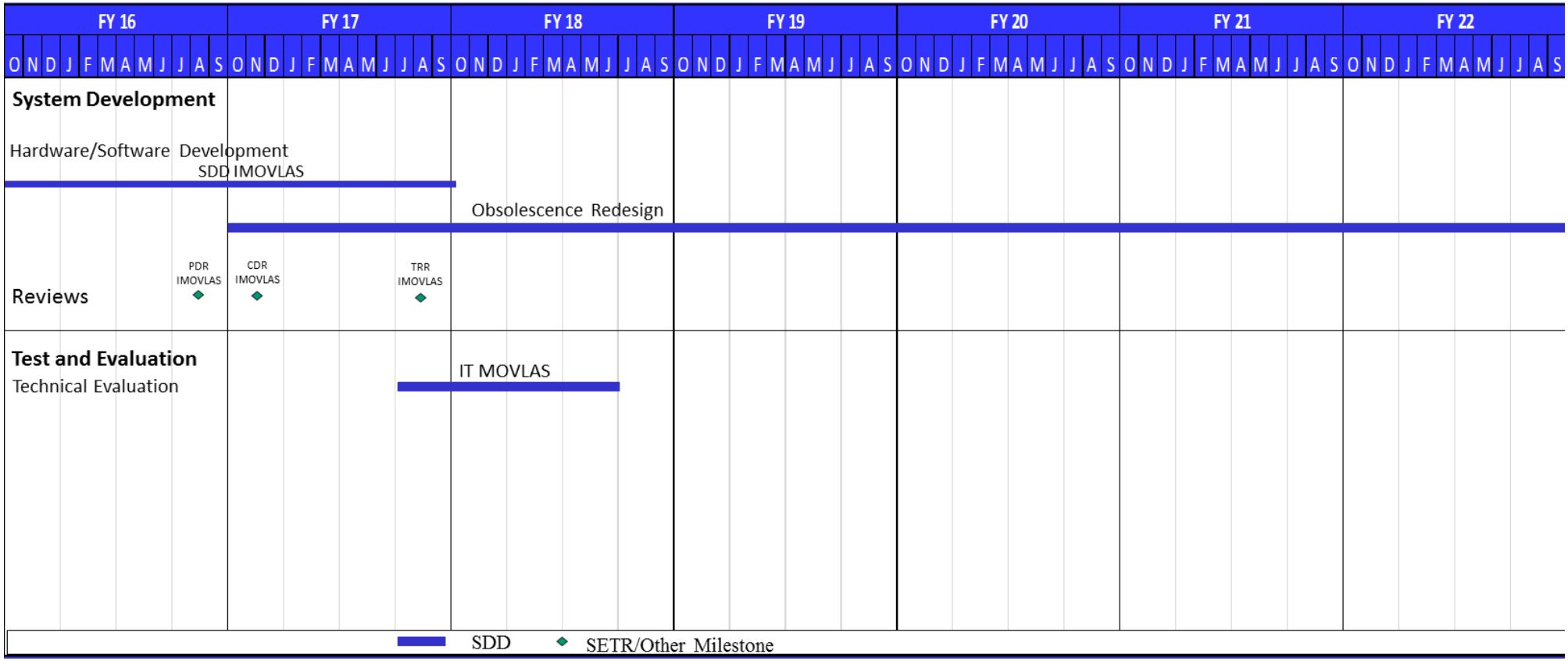

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

ALRE SLMP Schedule

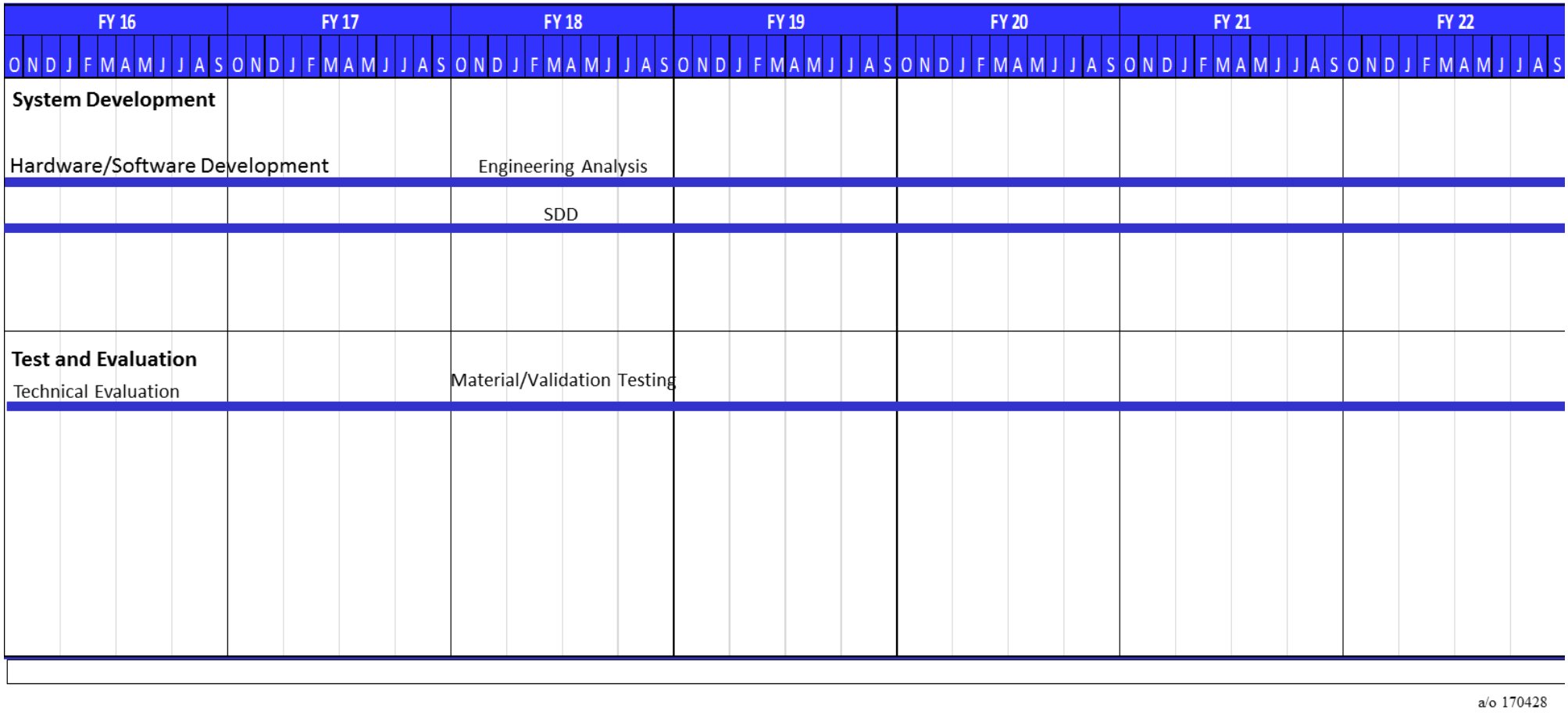

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

AAG Schedule

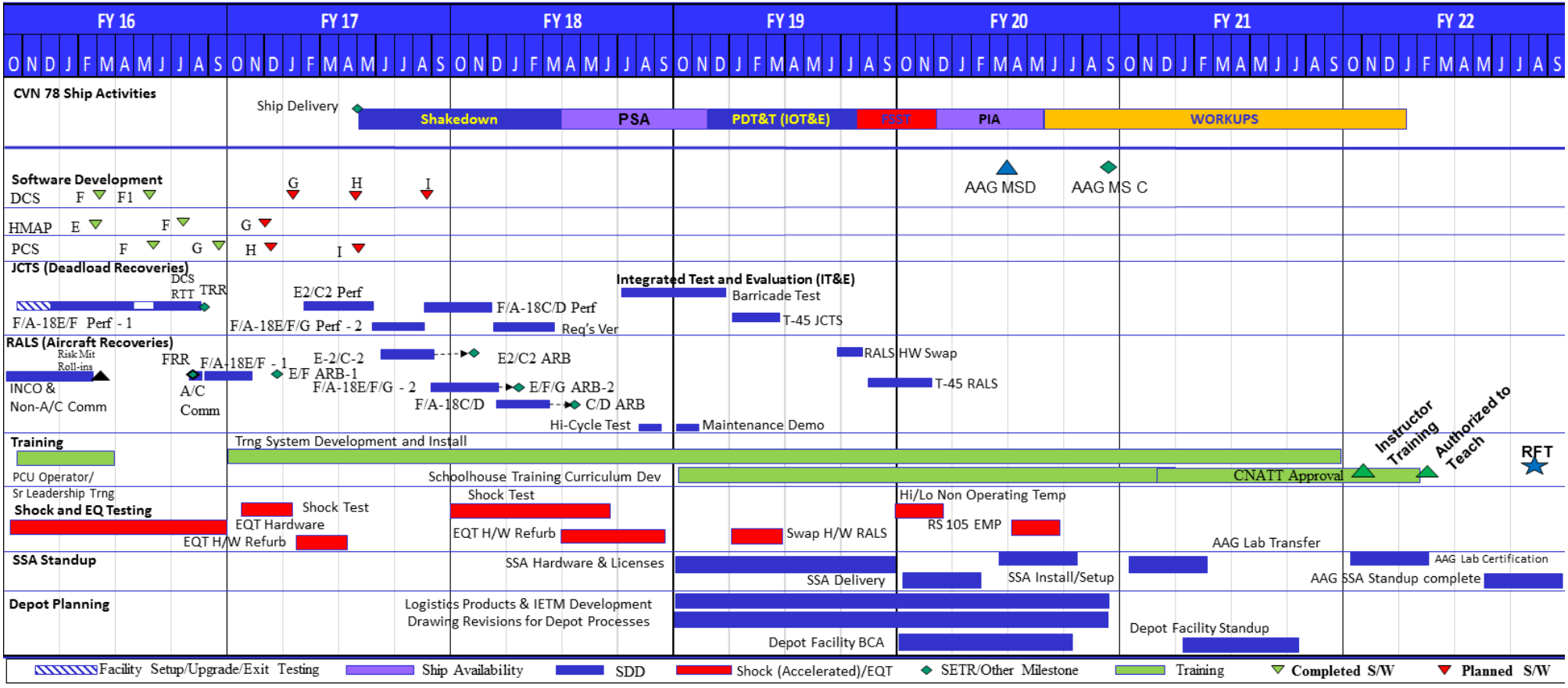

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ADVANCED ARRESTING GEAR (AAG)				
Aquisition Milestones: Milestones: Milestone C	4	2020	4	2020
Test & Evaluation: Technical Evaluation: Jet Car Test Site (JCTS) Test	1	2016	2	2019
Test & Evaluation: Technical Evaluation: Runway Arrested Landing Site Test (RALS)	2	2016	1	2020
Test & Evaluation: Technical Evaluation: Integrated Test and Evaluation	4	2018	4	2022
ALRE MODERNIZATION				
Systems Development: Hardware/Software Development: Obsolescence Redesign Development and Testing	1	2017	4	2022
Test and Evaluation: Technical Evaluation: Integrated Test	4	2017	3	2018
ALRE SERVICE LIFE MANAGEMENT PROGRAM (SLMP)				
Systems Development: Hardware/Software Development: System Development	1	2016	4	2022
Test & Evaluation: Technical Evaluation: Test & Evaluation	1	2016	4	2022

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604518N *I Combat Information Center Conv*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	49.280	0.000	6.283	8.062	-	8.062	8.260	8.564	5.466	5.508	Continuing	Continuing
3094: *USW Decision Support*	49.280	0.000	6.283	8.062	-	8.062	8.260	8.564	5.466	5.508	Continuing	Continuing

A. Mission Description and Budget Item Justification

Note: Prior year Undersea Warfare Decision Support System (USW-DSS) funding ended in FY 2013. This budget represents the restoral of USW-DSS development efforts, re-starting in FY 2017, for the modernization of Program of Record (PoR) Anti-Submarine Warfare (ASW) and Command, Control, Communications and Computer (C4) systems. Upgrades are required to address Cyber Security and End of Life (EOL) issues, improve capability and system interoperability, and implement Theater ASW (TASW).

USW-DSS provides the integrated, near-real time, net-centric ASW Common Tactical Picture (CTP) / Common Operational Picture (COP) on an electronic Master Tactical Plot (eMTP) capability across multiple surface platforms and critical shore sites. USW-DSS is a C4 capability, identified in the ASW Initial Capabilities Document (ICD), for the Sea Combat, Theater USW (TUSW), and ASW Commanders, and enables the planning and conduct of USW operations, alignment of sensors for exploitation of the environment, allocation of resources, optimization of operations and risk, and vulnerability assessment. USW-DSS provides USW Commanders with an expanded, net-centric USW capability across Carrier Strike Group (CSG) platforms (CVNs, CG/DDGs, and Integrated Undersea Surveillance System (IUSS)) as well as supporting shore nodes to include Theater Surface Combatants (TSC), Training, Naval Oceanographic Processing Facility (NOPF), and Commander Task Force (CTF).

USW-DSS processing software is hosted on the Consolidated Afloat Networks and Enterprise Services (CANES) and implements a Service-Oriented Architecture (SOA). USW-DSS capability is phased to deliver timely and cost-effective software improvements to the warfighter. The current software version, Build 2 Release 3, will continue to field until the follow-on Build 3 is ready for Initial Operational Capability (IOC) certification in FY 2020.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	6.283	7.002	-	7.002
Current President's Budget	0.000	6.283	8.062	-	8.062
Total Adjustments	0.000	0.000	1.060	-	1.060
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	1.100	-	1.100

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*		R-1 Program Element (Number/Name) PE 0604518N *I Combat Information Center Conv*			
• Rate/Misc Adjustments	0.000	0.000	-0.040	-	-0.040

Change Summary Explanation

Funding:
FY 2018: Net increase by $+1.060M to begin the integration of high-level fusion and other technologies/capabilities and implementation of cyber security and boundary defense requirements in support of TASW ($+1.100M) offset by decreases ($-0.040M) for Naval Innovative Science & Engineering (NISE)/Section 219 and NWCF rate adjustments.

YEAR-TO-YEAR OVERALL BUDGET CONTROL INCREASES/DECREASES:
- FY 2017 to FY 2018 increase ($+1.779M) is required to accelerate the development and test of the cyber security requirements to implement the multi-level security that results from the new sensors from cross-domain systems (Distributed Common Ground System - Navy (DCGS-N)).

Schedule Changes from PB17 to PB18: The nomenclature of USW-DSS builds has been changed. Future builds, beyond the currently fielded Build 2/Release 3 systems, will be categorized as Fleet Capability Releases (FCR). Build 3 became Build 3/Fleet Capability Release 1. Build 4 became Build 3/Fleet Capability Release 2. As the program has moved closer to execution, required efforts, events and time lines have been further evaluated and refined/adjusted accordingly. This increased the design/development phases and adjusted the start of the Integration/Test and Certification Test events.

Additionally, integration and test events were delayed in order to accommodate the integration of new cyber security requirements, as directed for all Navy systems in FY16. These new cyber security requirements resulted in increased design and development costs in FY 2017 and FY 2018.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604518N / *Combat Information Center Conv*	Project (Number/Name) 3094 / *USW Decision Support*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3094: *USW Decision Support*	49.280	0.000	6.283	8.062	-	8.062	8.260	8.564	5.466	5.508	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 3094 develops USW-DSS to provide the integrated, near-real time, net-centric ASW CTP/COP on an eMTP capability across multiple surface platforms and critical shore sites. USW-DSS is a C4 capability, identified in the ASW ICD, for the Sea Combat, TUSW, and ASW Commanders, and enables the ability to plan and conduct USW operations, alignment of sensors for exploitation of the environment, allocation of resources, optimization of operations and risk, and vulnerability assessment. USW-DSS provides USW Commanders with an expanded net-centric USW capability across CSG platforms (CVNs, CG/DDGs, and IUSS) as well as supporting shore nodes to include TSCs, Training, NOPF, and CTF.

USW-DSS provides capabilities to shorten C2 decision processes for detection-to-engagement across multiple platforms, including those with low-bandwidth communications or intermittent connectivity.

USW-DSS software processing requirements are hosted on CANES and implement a SOA while display generation and operator interfaces are provided via USW-DSS hardware. Build 3 Fleet Capability Release (FCR) incremental developments will implement cost effective cyber security, TASW functionality by integrating data from data sources and platforms such as the P-8, provide improved and additional functionality, and improve stability/reliability.

USW-DSS will provide common and improved visualization, integrated USW platform sensor data sharing, reduced data entry, improved sensor performance predictions, data fusion, and reduced redundancy across USW Tactical Decision Aids (TDAs). The program will provide a greater understanding of the undersea battle space by allowing the entire force (carrier/expeditionary strike group, theater, or other) to have a common and thorough understanding of the battle space with characterized uncertainties.

The Navy continues to modernize and add capabilities to existing PORs that are significant data sources for USW-DSS. These include, but not limited to, the AN/SQQ-89 Surface ASW Combat System, the AN/SQQ-34 Aircraft Carrier Tactical Support Center (CV-TSC), Global Command and Control System - Maritime (GCCS-M), and the Distributed Common Ground System - Navy (DCGS-N).

USW-DSS capability is phased to cost-effectively deliver software improvements to the warfighter. The current software version, Build 2 Release 3 (development completed in FY 2013), will continue to field until the follow-on Build 3/FCR 1 is certified for Fleet deployment.

With the restoral of funding in FY 2017, USW-DSS will develop and test the software changes necessary to address EOL support that will impact Build 2 Release 3 and subsequently design, develop, integrate, and test additional USW-DSS tools/capabilities into Build 3 including, but not limited to: CTP, Platform Data Fusion Integration, Cross-Platform Data Fusion, Automated Asset Allocation, Asset/Threat State Information, Vulnerability Analysis enhancement, ASW Track Management, Automated

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604518N / *Combat Information Center Conv*	**Project (Number/Name)** 3094 / *USW Decision Support*

Re-planning, Engagement Target Pairing, improved TASW capabilities, Data-Focused Navy Tactical Cloud Integration, and incorporate the eMTP visualization/display service on which to render the CTP/COP.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: USW-DSS Capability Improvements	0.000	6.283	8.062	0.000	8.062
Articles:	-	-	-	-	-

Description: Design, develop, integrate, and test additional USW-DSS tools/capabilities for Build 3 including, but not limited to, CTP, Platform Data Fusion Integration, Cross-Platform Data Fusion, Automated Asset Allocation, Asset/Threat State Information, Vulnerability Analysis enhancement, ASW Track Management, Automated Re-planning, Engagement Target Pairing, improved TUSW capabilities, Data-Focused Navy Tactical Cloud Integration, and incorporate the eMTP visualization/display service.

FY 2016 Accomplishments:
Not Applicable

FY 2017 Plans:
- Restore USW-DSS development and begin design/development efforts for Build 3/FCR 1. Build 2 Release 3 is the baseline for Build 3.
- Implement the SOA required for cyber security.
- Design, develop, and integrate TASW capability into USW-DSS Build 3/FCR 1.
- Maintain critical existing data source interfaces with other ASW PORs such as AN/SQQ-89, CV-TSC, and GCCS-M.
- Initiate USW-DSS Build 3/FCR 1 test planning efforts, including drafting Test & Evaluation Master Plan (TEMP) and test/integration plans.

FY 2018 Base Plans:
- Continue development efforts for Build 3/FCR 1 and begin Build 3/FCR 1 integration and testing activities.
- Develop and test software updates to Build 2 Release 3 fielded systems required for USW-DSS to remain certified through EOL (prior to fielding of Build 3).
- Accelerate and synchronize USW-DSS and DCGS-N and develop the interfaces to support the multi-level security for high-level fusion of new national sensors used for Wide-Area Search / Surveillance for TASW.
- Complete interface specifications and draft Interface Control Drawings (ICDs) in preparation for prototype delivery Commander Task Force (CTF) 34 Theater ASW watch floor for Composite Training Unit Exercise (COMPTUEX) at-sea event scheduled for 3Q18.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604518N / *Combat Information Center Conv*	**Project (Number/Name)** 3094 / *USW Decision Support*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- In accordance with current cyber security Information Assurance (IA) directives, develop/integrate updates to achieve certification of USW-DSS Build 3/FCR 1. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	6.283	8.062	0.000	8.062

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2176: *USW Support Equipment (N2N6/USW-DSS only)*	3.867	4.463	10.784	-	10.784	7.519	6.201	5.181	5.164	Continuing	Continuing

Remarks

D. Acquisition Strategy

- Hardware/Software development and integration via Navy Warfare Centers and Small Business contractors.

E. Performance Metrics

- Improve capability and system interoperability.
- Achieve IOC for TASW capability.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604522N *I (U)Air and Missile Defense Radar (AMDR) System*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	992.359	227.051	144.395	32.090	-	32.090	171.384	184.006	57.782	41.230	Continuing	Continuing
3186: *Air and Missile Defense Radar*	992.359	227.051	144.395	32.090	-	32.090	171.384	184.006	57.782	41.230	Continuing	Continuing

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): P384

A. Mission Description and Budget Item Justification

Air and Missile Defense Radar (AMDR): (NOTE: FY14 and prior year funding is in PE 0604501N) The AMDR suite is being developed to fulfill Integrated Air and Missile Defense requirements for multiple ship classes. This suite consists of an S-Band radar (AMDR-S), an X-band radar and a Radar Suite Controller (RSC). Funding will develop AMDR-S and RSC, and integrate these components with an available X band radar. AMDR will provide multi-mission capabilities, simultaneously supporting both long range, exoatmospheric detection, tracking and discrimination of ballistic missiles, as well as Area and Self Defense against air and surface threats. For the Ballistic Missile Defense (BMD) capability, increased radar sensitivity and bandwidth over current radar systems are needed to detect, track and support engagements of advanced ballistic missile threats at the required ranges, concurrent with Area and Self Defense against Air and Surface threats. For the Area Air Defense and Self Defense capability, increased sensitivity and clutter capability is needed to detect, react to, and engage stressing Very Low Observable/Very Low Flyer (VLO/VLF) threats in the presence of heavy land, sea, and rain clutter. This effort provides for the development of an active phased array radar with the required capabilities to address the evolving threat. The AMDR suite will obtain performance and technology enhancements throughout its service life based upon an approach that includes modularity of hardware and software, a scalable design and Open Architecture (OA) compliance. The FY19-22 controls include funding to procure long lead hardware to build a single AMDR array as well as support the installation and checkout on an unmanned self-defense test ship. This funding will support the at-sea testing of the DDG-51 Flt III and Aegis Advanced Capability Build 20 (ACB 20) requirements. However, this does not include any funding for procurement of testing assets and the conduct of the testing efforts. The program is on track to complete developmental testing and deliver to the DDG 51 Flight III.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	232.677	144.395	31.923	-	31.923
Current President's Budget	227.051	144.395	32.090	-	32.090
Total Adjustments	-5.626	0.000	0.167	-	0.167
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-5.626	0.000			
• Program Adjustments	0.000	0.000	-0.130	-	-0.130

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*		R-1 Program Element (Number/Name) PE 0604522N *I (U)Air and Missile Defense Radar (AMDR) System*			
• Rate/Misc Adjustments	0.000	0.000	0.297	-	0.297

Change Summary Explanation

FY16: $5.6M reduction due to Small Business Innovative Research (SBIR) adjustment.

FY16 and FY17 funding requirements have changed since PB17 primarily due to a change in Development Test (DT-3) test methodology from inbound shipboard launch to outbound land-based launch which resulted in an overall reduction to total Government FY16 and FY17 Test & Evaluation costs. "Test Assets and Facilities" funding decreased in FY16 and increased in FY17 due to re-phasing funds required for AEGIS Readiness Assessment Vehicle (ARAV) targets. "Operations and Analysis" funding decreased in both FY16 and FY17. The significant decrease in FY17 is due to removing costs associated with the shipboard launch platform.

The overall decrease in Government Test and Evaluation costs was offset by Raytheon contract overruns. Raytheon FY16 and FY17 funding increased primarily due to Digital Receiver/Exciter and Digital Beamformer performance problems. This resulted in changes to "AMDR Hardware", "AMDR Software", and "AMDR Design, Support, Integration, Test & Evaluation" funding levels in the R-2A.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	Project (Number/Name) 3186 / *Air and Missile Defense Radar*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3186: *Air and Missile Defense Radar*	992.359	227.051	144.395	32.090	-	32.090	171.384	184.006	57.782	41.230	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: P384

A. Mission Description and Budget Item Justification

Air and Missile Defense Radar (AMDR): (NOTE: FY14 and prior year funding is in PE 0604501N) The AMDR suite is being developed to fulfill Integrated Air and Missile Defense requirements for multiple ship classes. This suite consists of an S-Band radar (AMDR-S), an X-band radar and a Radar Suite Controller (RSC). Funding will develop AMDR-S and RSC, and integrate these components with an available X band radar. AMDR will provide multi-mission capabilities, simultaneously supporting both long range, exoatmospheric detection, tracking and discrimination of ballistic missiles, as well as Area and Self Defense against air and surface threats. For the Ballistic Missile Defense (BMD) capability, increased radar sensitivity and bandwidth over current radar systems are needed to detect, track and support engagements of advanced ballistic missile threats at the required ranges, concurrent with Area and Self Defense against Air and Surface threats. For the Area Air Defense and Self Defense capability, increased sensitivity and clutter capability is needed to detect, react to, and engage stressing Very Low Observable/Very Low Flyer (VLO/VLF) threats in the presence of heavy land, sea, and rain clutter. This effort provides for the development of an active phased array radar with the required capabilities to address the evolving threat. The AMDR suite will obtain performance and technology enhancements throughout its service life based upon an approach that includes modularity of hardware and software, a scalable design and Open Architecture (OA) compliance. The FY19-22 controls include funding to procure long lead hardware to build a single AMDR array as well as support the installation and checkout on an unmanned self-defense test ship. This funding will support the at-sea testing of the DDG-51 Flt III and Aegis Advanced Capability Build 20 (ACB 20) requirements. However, this does not include any funding for procurement of testing assets and the conduct of the testing efforts. The program is on track to complete developmental testing and deliver to the DDG 51 Flight III.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: AMDR HARDWARE (RAYTHEON)	13.859	2.052	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Completed procurement of Engineering Development Model (EDM) material - Completed procurement of generators for land-based test site to support DT-3 testing Increase from PB17 planned value due primarily to: - Additional material costs associated with correcting Digital Receiver Exciter (DREX) and Digital Beamformer deficiencies and performance issues					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	**Project (Number/Name)** 3186 / *Air and Missile Defense Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Increased Transmit/Receive Integrated Multi-channel Module (TRIMM) material costs including Monolithic Microwave Integrated Circuit (MMICs) yield issues - Costs associated with resolution of supplier issues with Array Power System components ***FY 2017 Plans:*** - Procure spares for DT-3 Testing Increase from PB17 planned value due primarily to: - Additional DREX, TRIMM and Power Distribution System (PDS) spares required for DT-3 testing at the PMRF test facility ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: AMDR SOFTWARE (RAYTHEON)	36.663	11.896	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Designed, coded, tested, and integrated software builds to support conduct of DT-3 Increase from PB17 planned value primarily due to: - Growth in program protection software development and associated defect resolution - Equivalent Lines of Code (ELOC) growth due to less reuse than planned and increased complexity ***FY 2017 Plans:*** - Complete design, code, test, and integration to support completion of DT-3 Increase from PB17 planned value primarily due to: - ELOC growth due to less reuse than planned and increased complexity - Additional engineers assigned to software development teams ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	**Project (Number/Name)** 3186 / *Air and Missile Defense Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 OCO Plans:*** N/A					
Title: AMDR DESIGN, SUPPORT, INTEGRATION, TEST AND EVALUATION (RAYTHEON)	90.999	47.918	20.181	0.000	20.181
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Supported Working Groups (WGs) to facilitate successful integration of the radar with the ship and combat system - Delivered the EDM to the Pacific Missile Range Facility (PMRF) - Delivered generators to PMRF - Conducted set up, integration and checkout of the EDM and generators at PMRF - Installed and integrated AN/SPQ-9B at PMRF - Conducted DT-3 Test Readiness Review (TRR) and begin System Integration tests (DT-3) at PMRF Increase from PB17 planned value primarily due to: - Additional DREX testing to address functionality issues encountered during Software Integration and Test - Digital Beamformer design updates including additional firmware development - Additional resources to assist in subcontractor on-site support, risk management, earned value management, and technical oversight					
FY 2017 Plans: - Continue and complete System Integration tests (DT-3) at PMRF - Conduct System Verification Review/Functional Configuration Audit/Production Readiness Review (SVR/FCA/PRR) Increase from PB17 planned value primarily due to: - Increased Integration, Assembly, Test and Checkout costs - Increased cost associated with maintaining/operating Advanced Radar Detection Laboratory (ARDEL) generators - Additional resources to assist in subcontractor on-site support, risk management, earned value management, and technical oversight					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	**Project (Number/Name)** 3186 / *Air and Missile Defense Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Provide system engineering and software update support of AEGIS ACB 20 Preliminary Design Review (PDR) ***FY 2018 OCO Plans:*** N/A					
Title: DESIGN, SUPPORT, AND INTEGRATION	18.299	14.663	6.584	0.000	6.584
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Supported delivery of the EDM to PMRF - Supported delivery and installation of the SPQ-9B to PMRF - Conducted the DT-3 TRR and supported the DT-3 test activities at PMRF ***FY 2017 Plans:*** - Support the SVR/FCA/PRR - Develop documentation in support of Milestone C (MS C) - Support completion of DT-3 test activities at PMRF Decrease from PB17 planned value primarily due to: - Reduced government system engineering to cover increased Raytheon T&E costs ***FY 2018 Base Plans:*** - Support combat system integration and DDG 51 FLT III integration, including preparing for ACB 20 PDR and Critical Design Review (CDR) ***FY 2018 OCO Plans:*** N/A					
Title: TEST AND EVALUATION OPERATIONS AND ANALYSIS	13.733	19.123	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Completed test planning in support of test site requirements - Supported the installation of the generators and delivery and integration of the EDM at PMRF - Supported DT-3 TRR and began System Integration tests (DT-3) at PMRF Decrease from PB17 planned value primarily due to:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	**Project (Number/Name)** 3186 / *Air and Missile Defense Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Removing shipboard launch platform planning, analysis, and pre-deployment engineering costs due to change in test methodology from shipboard launch to land-based launch ***FY 2017 Plans:*** - Complete conduct of DT-3 testing, including launch of test targets Decrease from PB17 planned value primarily due to: - Removing costs associated with operating shipboard launch platform (crew, ship fuel, port fees, etc.) due to change in test methodology from shipboard launch to land-based launch ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: TEST AND EVALUATION ASSETS AND FACILITIES	49.372	45.006	3.781	0.000	3.781
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Continued to procure material for simple and complex separating ballistic missile targets and other test assets to support DT-3 test efforts - Maintained PMRF test site facility - Provided engineering services for required modifications to DT-3 targets Decrease from PB17 planned value primarily due to: - Re-phasing funds from FY16 to FY17 required for AEGIS Readiness Assessment Vehicle (ARAV) targets - Removing costs associated with converting sea based launch platform (installation of launcher, telemetry equipment, deck/power modifications, etc.) ***FY 2017 Plans:*** - Maintain PMRF test site facility - Provide PMRF range services in support of DT-3 test efforts - Provide engineering services in support of DT-3 flight testing Increase from PB17 planned value primarily due to:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	**Project (Number/Name)** 3186 / *Air and Missile Defense Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Re-phasing funds from FY16 to FY17 required for ARAV targets - Engineering for land-based launcher design/modifications - Use of Kauai Test Facility including storage of hazardous items, use of telemetry equipment, and Flight Safety support ***FY 2018 Base Plans:*** - Maintain PMRF test site ***FY 2018 OCO Plans:*** N/A					
Title: PROGRAM MANAGEMENT	4.126	3.737	1.544	0.000	1.544
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Provided support to integrated Product Team (IPT) and WGs required for program execution of the Engineering & Manufacturing Development (E&MD) contract - Supported DT-2 and DT-3 test activities - Analyzed and assessed contractor deliverables - Conducted regular Program Management Reviews - Assisted in cost, schedule and performance management, contract management and oversight, earned value assessment, and risk identification and mitigation - Provided support to the TRR to facilitate the start of DT-3 testing - Provided support to technical interchange meetings ***FY 2017 Plans:*** - Provide support to IPT and WGs required for program execution of the E&MD contract - Analyze and assess contractor deliverables - Conduct regular Program Management Reviews - Assist in cost, schedule and performance management, contract management and oversight, earned value assessment, and risk identification and mitigation - Provide support to the SVR/FCA/PRR - Provide support to technical interchange meetings - Support DT-3 test activities					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	**Project (Number/Name)** 3186 / *Air and Missile Defense Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Support MS C ***FY 2018 Base Plans:*** - Analyze and assess contractor deliverables - Assist in cost, schedule, and performance management, contract management and oversight, earned value assessment and risk identification and mitigation - Provide support to technical interchange incentives ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	227.051	144.395	32.090	0.000	32.090

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN/2122: *DDG51*	4,207.664	3,660.251	3,640.792	-	3,640.792	3,819.964	3,731.008	3,392.011	3,448.012	Continuing	Continuing

Remarks

D. Acquisition Strategy

AMDR: Plans for the Air and Missile Defense Radar are to leverage research and development investments, integrate sufficiently matured advanced technologies from technology risk reduction efforts, and incorporate Open Architecture approaches to develop a scalable radar design with major improvements in power, sensitivity, resistance to natural and man-made environments over current radar systems for simultaneous multi-mission BMD, Area and Self Defense Anti-Air Warfare (AAW). System design will be accomplished by employing proven technologies and commercial standards to lower schedule risk and develop a product with the lowest life-cycle cost.

Program scope consists of the following phases: a Concept Studies phase; a Technology Development phase, which included competitive prototyping; an E&MD phase, which includes completion of a full EDM for land-based testing; and transition to production. The detailed scope of this acquisition is defined in the approved Milestone B AMDR Acquisition Strategy (AS).

E. Performance Metrics

- Complete Technology Development (TD) phase System Requirements Review, Test Readiness Review, TD Prototype testing, TD System Functional Review, and TD Preliminary Design Review (PDR)
- Achieve Milestone B decision to proceed into Engineering & Manufacturing Development (E&MD) phase
- Award E&MD contract

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	**Project (Number/Name)** 3186 / *Air and Missile Defense Radar*

- Conduct E&MD Phase Integrated Baseline Review
- Conduct Hardware Delta PDR and System Delta PDR
- Conduct Hardware and System CDRs
- Complete Engineering Development Model (EDM) testing
- Achieve Milestone C decision to proceed into production and exercise Low Rate Initial Production (LRIP) options
- Conduct SVR/FCA/PRR
- Support ACB 20 and Ballistic Missile Defense (BMD) 6.X PDR and CDR
- Award Integration and Production Support Contract

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	Project (Number/Name) 3186 / *Air and Missile Defense Radar*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Manufacturing Development	C/CPIF	Raytheon : Sudbury, MA	72.404	141.521	Oct 2015	61.866	Oct 2016	15.385	Oct 2017	-		15.385	Continuing	Continuing	Continuing
Integration and Production Support	SS/FFP	TBD : TBD	0.000	0.000		0.000		4.796	May 2018	-		4.796	0.000	4.796	-
		Subtotal	72.404	141.521		61.866		20.181		-		20.181	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	MIPR	GTRI : Atlanta, GA	0.512	0.120	Nov 2016	0.068	May 2017	0.000		-		0.000	0.000	0.700	-
Systems Engineering	SS/CPFF	JHU/APL : Laurel, MD	6.534	5.703	Mar 2016	5.321	Dec 2016	2.449	Dec 2017	-		2.449	Continuing	Continuing	Continuing
Systems Engineering	MIPR	MIT : Cambridge, MD	0.878	0.697	Jun 2016	0.868	Mar 2017	0.401	Mar 2018	-		0.401	Continuing	Continuing	Continuing
Systems Engineering	WR	NRL : Washington, DC	0.934	1.257	Dec 2015	0.865	Nov 2016	0.398	Nov 2017	-		0.398	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/CR : Crane, IN	1.761	1.853	Jan 2016	1.077	Nov 2016	0.495	Nov 2017	-		0.495	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/DD : Dahlgren, VA	5.310	3.061	Feb 2016	2.966	Dec 2016	1.453	Dec 2017	-		1.453	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/PHD : Port Hueneme, CA	1.258	1.294	Mar 2016	0.863	Nov 2016	0.397	Nov 2017	-		0.397	Continuing	Continuing	Continuing
Systems Engineering	C/CPIF	SPA (SEAPORT) : Washington, DC	2.152	3.207	Mar 2016	0.244	Dec 2016	0.000		-		0.000	0.000	5.603	-
Systems Engineering	MIPR	ARL : Adelphi, MD	0.378	0.302	Dec 2015	0.219	Nov 2016	0.241	Nov 2017	-		0.241	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/CD : Carderock, MD	0.286	0.000		0.000		0.000		-		0.000	0.000	0.286	-
Systems Engineering	WR	NSWC/Corona : Corona, CA	0.228	0.191	Mar 2016	0.160	Apr 2017	0.073	Apr 2018	-		0.073	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	Project (Number/Name) 3186 / *Air and Missile Defense Radar*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	Allot	DISA : Scott AFB, Illinois	0.004	0.004	Oct 2015	0.010	Nov 2016	0.011	Nov 2017	-		0.011	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC IH : Indian Head, MD	0.335	0.334	May 2016	0.000		0.000		-		0.000	0.000	0.669	-
Systems Engineering	SS/FFP	Northrop Grumman : Baltimore, MD	0.000	0.066	Sep 2016	0.799	May 2017	0.000		-		0.000	0.000	0.865	-
Systems Engineering	C/FFP	DRS Power & Control Technologies, Inc. : Milwaukee, WI	0.213	0.000		0.000		0.000		-		0.000	0.000	0.213	-
Systems Engineering	SS/CPFF	TBD ESS : TBD	0.000	0.000		1.203	May 2017	0.666	Dec 2017	-		0.666	0.000	1.869	-
Systems Engineering	C/CPIF	AEGIS TECHREP : Moorestown, NJ	0.000	0.210	May 2016	0.000		0.000		-		0.000	0.000	0.210	-
		Subtotal	20.783	18.299		14.663		6.584		-		6.584	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	WR	COMOPTEVFOR : Norfolk, VA	0.246	0.553	Feb 2016	0.624	Feb 2017	0.000		-		0.000	0.000	1.423	-
Test and Evaluation	MIPR	GTRI : Atlanta, GA	0.000	0.000		0.254	May 2017	0.000		-		0.000	0.000	0.254	-
Test and Evaluation	SS/CPFF	JHU/APL : Laurel, MD	4.852	5.602	Mar 2016	8.711	Dec 2016	0.000		-		0.000	0.000	19.165	-
Test and Evaluation	MIPR	MIT : Cambridge, MD	0.254	0.000		0.082	Mar 2017	0.000		-		0.000	0.000	0.336	-
Test and Evaluation	WR	NAWC WD : Pt. Mugu, CA	0.780	1.304	Jan 2016	3.957	Feb 2017	0.000		-		0.000	0.000	6.041	-
Test and Evaluation	WR	NRL : Washington, DC	0.000	1.000	Dec 2015	1.352	Nov 2016	0.000		-		0.000	0.000	2.352	-
Test and Evaluation	WR	NSWC/DD : Dahlgren, VA	0.908	2.160	Feb 2016	2.899	Dec 2016	0.000		-		0.000	0.000	5.967	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	Project (Number/Name) 3186 / *Air and Missile Defense Radar*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	WR	NSWC/PHD : Port Hueneme, CA	1.514	2.599	Mar 2016	2.057	Nov 2016	0.000		-		0.000	0.000	6.170	-
Test and Evaluation	WR	PMRF : Kekaha, HI	0.721	1.545	Jan 2016	9.229	Nov 2016	3.781	Nov 2017	-		3.781	Continuing	Continuing	Continuing
Test and Evaluation	C/CPIF	SPA (SEAPORT) : Washington, DC	0.816	1.422	Mar 2016	0.244	Dec 2016	0.000		-		0.000	0.000	2.482	-
Test and Evaluation	WR	NSWC/PHD WS : Port Hueneme, CA	17.156	44.796	Oct 2015	26.971	Nov 2016	0.000		-		0.000	0.000	88.923	-
Test and Evaluation	WR	NSWC Corona : Corona, CA	3.671	1.014	Dec 2016	0.572	Jan 2017	0.000		-		0.000	0.000	5.257	-
Test and Evaluation	WR	CNA-ONR : Arlington, VA	0.055	0.054	Mar 2016	0.061	Apr 2017	0.000		-		0.000	0.000	0.170	-
Test and Evaluation	C/BA	MDA : Redstone Arsenal, AL	0.000	0.100	Jan 2016	1.242	Jan 2017	0.000		-		0.000	0.000	1.342	-
Test and Evaluation	C/CPIF	Engility : Andover, MA	0.000	0.116	May 2016	0.405	Dec 2016	0.000		-		0.000	0.000	0.521	-
Test and Evaluation	MIPR	DOI : Boise, ID	0.000	0.076	Jun 2016	1.730	Feb 2017	0.000		-		0.000	0.000	1.806	-
Test and Evaluation	WR	NSWC Crane : Crane, IN	0.000	0.627	May 2016	0.000		0.000		-		0.000	0.000	0.627	-
Test and Evaluation	MIPR	AFSEO : Eglin AFB, FL	0.000	0.005	Sep 2016	0.040	Mar 2017	0.000		-		0.000	0.000	0.045	-
Test and Evaluation	WR	FRCE - PMA 226 : Cherry Point, NC	0.000	0.005	Sep 2016	0.000		0.000		-		0.000	0.000	0.005	-
Test and Evaluation	WR	NUWC KP : Keyport, WA	0.000	0.127	Aug 2016	0.261	Nov 2016	0.000		-		0.000	0.000	0.388	-
Test and Evaluation	MIPR	Air National Guard : Tulsa, OK	0.000	0.000		1.472	May 2017	0.000		-		0.000	0.000	1.472	-
Test and Evaluation	WR	COMNAVAIRPAC : San Diego, CA	0.000	0.000		0.074	Feb 2017	0.000		-		0.000	0.000	0.074	-
Test and Evaluation	WR	NSWC CD : Carderock, MD	0.000	0.000		0.924	Jan 2017	0.000		-		0.000	0.000	0.924	-
Test and Evaluation	MIPR	AFRL : Kirtland AFB, NM	0.000	0.000		0.037	May 2017	0.000		-		0.000	0.000	0.037	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	Project (Number/Name) 3186 / *Air and Missile Defense Radar*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	SS/CPFF	TBD ESS : TBD	0.000	0.000		0.931	May 2017	0.000		-		0.000	0.000	0.931	-
		Subtotal	30.973	63.105		64.129		3.781		-		3.781	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Management Services	C/CPIF	SPA (SEAPORT) : Washington, DC	1.102	2.412	Mar 2016	0.488	Dec 2016	0.000		-		0.000	0.000	4.002	-
Travel	Sub Allot	PEOIWS2 : Washington, DC	0.097	0.245	Mar 2016	0.205	May 2017	0.075	Mar 2018	-		0.075	0.000	0.622	-
Support Management Services	WR	NSWC/DD : Dahlgren, VA	867.000	0.821	Feb 2016	0.584	Dec 2016	0.271	Dec 2017	-		0.271	0.000	868.676	-
Support Management Services	C/CPFF	TMB-PSS : Washington, DC	0.000	0.037	Apr 2016	0.225	Dec 2016	0.094	Dec 2017	-		0.094	0.000	0.356	-
Support Management Services	C/CPFF	CACI-PSS : Washington, DC	0.000	0.402	May 2016	0.240	Apr 2017	0.100	Mar 2018	-		0.100	0.000	0.742	-
Support Management Services	C/CPFF	STRATEGIC INSIGHT : Arlington, VA	0.000	0.111	Nov 2016	0.000		0.000		-		0.000	0.000	0.111	-
Support Management Services	C/CPIF	UNC : Chapel Hill, NC	0.000	0.098	Nov 2016	0.000		0.000		-		0.000	0.000	0.098	-
Support Management Services	WR	NSWC/CD : Carderock, MD	0.000	0.000		0.082	May 2017	0.000		-		0.000	0.000	0.082	-
Support Management Services	SS/CPFF	TBD ESS : TBD	0.000	0.000		1.913	May 2017	1.004	Dec 2017	-		1.004	0.000	2.917	-
		Subtotal	868.199	4.126		3.737		1.544		-		1.544	0.000	877.606	-

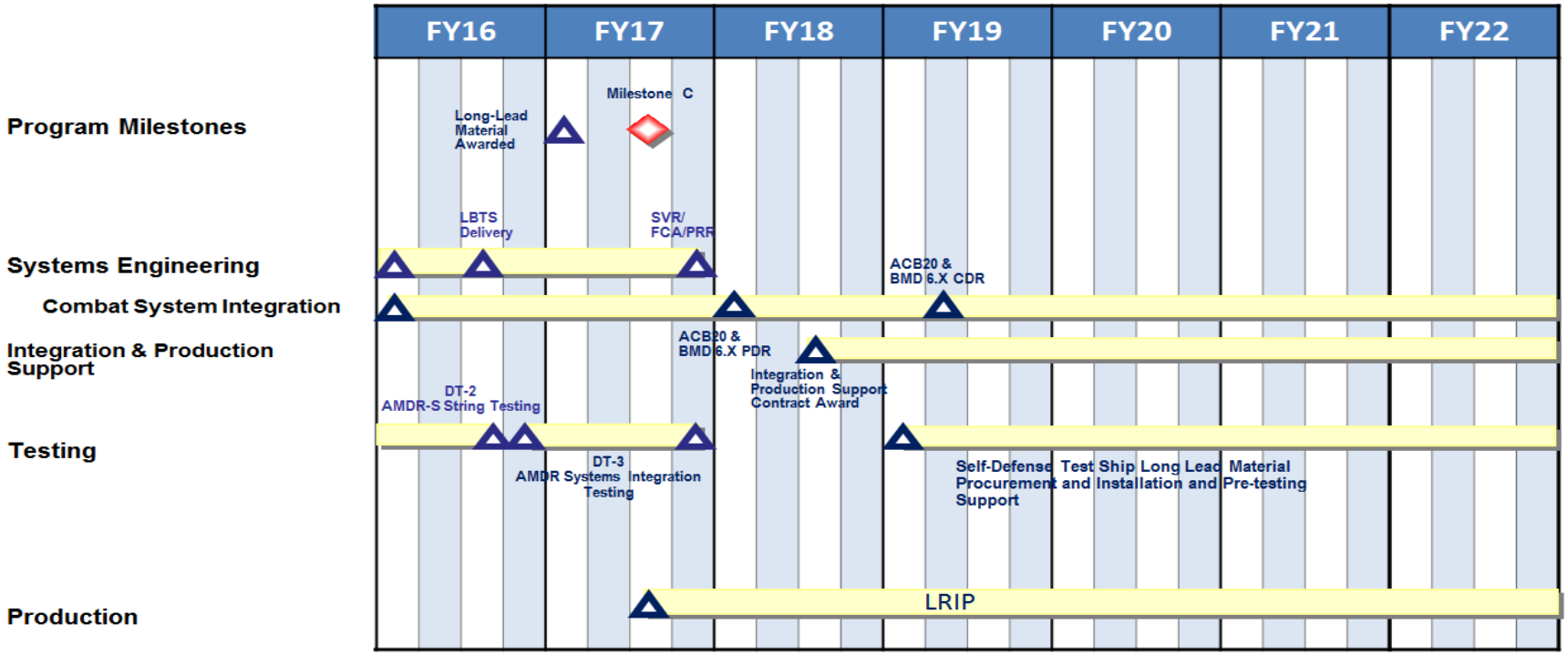
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	992.359	227.051		144.395		32.090		-		32.090	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	Project (Number/Name) 3186 / *Air and Missile Defense Radar*	

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	**Project (Number/Name)** 3186 / *Air and Missile Defense Radar*



ACB	Advanced Capability Build	DT	Developmental Test	PDR	Preliminary Design Review
BMD	Ballistic Missile Defense	FCA	Functional Configuration Audit	PRR	Production Readiness Review
CDR	Critical Design Review	LBTS	Land Based Test Site	SVR	System Verification Review
		LRIP	Low-Rate Initial Production		

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604522N / *(U)Air and Missile Defense Radar (AMDR) System*	**Project (Number/Name)** 3186 / *Air and Missile Defense Radar*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3186				
E&MD AMDR-S String Testing (DT-2)	1	2016	3	2016
Engineering Development Model delivered to Land Based Test Site	3	2016	3	2016
E&MD AMDR System Integration Testing (DT-3)	4	2016	4	2017
LRIP Long Lead Material Award	1	2017	1	2017
Milestone C	3	2017	3	2017
System Verification Review/Functional Configuration Audit/Production Readiness Review	4	2017	4	2017
ACB 20 and BMD 6.X PDR	1	2018	1	2018
Integration and Production Support Contract Award	3	2018	4	2022
Self-Defense Test Ship Long Lead Material Procurement, Installation, and Pre-testing Support	1	2019	4	2022
ACB 20 and BMD 6.X CDR	2	2019	2	2019

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604558N *I New Design SSN*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	2,306.688	150.442	113.013	120.087	-	120.087	100.116	82.832	88.828	90.507	Continuing	Continuing
1947: *New Design SSN HM&E*	1,400.471	76.040	83.586	82.506	-	82.506	58.059	43.711	48.906	49.793	Continuing	Continuing
1950: *New Design SSN Combat Sys Dev*	859.423	30.667	26.977	34.913	-	34.913	39.342	36.348	37.088	37.823	Continuing	Continuing
3062: *Submarine Multi-Mission Team Trainer*	32.289	7.528	2.450	2.668	-	2.668	2.715	2.773	2.834	2.891	Continuing	Continuing
9999: *Congressional Adds*	14.505	36.207	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	50.712
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 516												

A. Mission Description and Budget Item Justification

The U.S. Navy must maintain a submarine fleet that is of sufficient capability and numbers to defend American interests. The VIRGINIA Class Submarine, formerly the New Attack Submarine (New SSN), is being designed to fulfill this need. It will counter the potential threats of the next century in a multi- mission capable submarine that has the ability to provide covert, sustained combat presence in denied waters. The primary goal of the program is to develop an affordable yet capable submarine by evaluating a broad range of system and technology alternatives, and pursuing cost reduction, producibility improvement, and technical risk management. This Program Element (PE) provides the technology, prototype components, and systems engineering needed to design and construct the VIRGINIA Class Submarine and build its Command, Control, Communications, and Intelligence (C3I) System. This PE directly supports the following VIRGINIA Class Submarine missions: (1) covert strike warfare (STRIKE); (2) anti-submarine warfare (ASW); (3) covert intelligence collection/surveillance (ISR), indication and warning (I&W), and electronic warfare (EW); (4) anti-surface ship warfare (ASUW); (5) special warfare; (6) covert mine warfare; and (7) battle group support.

B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	157.056	113.013	150.700	-	150.700
Current President's Budget	150.442	113.013	120.087	-	120.087
Total Adjustments	-6.614	0.000	-30.613	-	-30.613
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.400	0.000			
• SBIR/STTR Transfer	-4.214	0.000			
• Program Adjustments	0.000	0.000	-31.820	-	-31.820

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*		R-1 Program Element (Number/Name) PE 0604558N *I New Design SSN*			
• Rate/Misc Adjustments	0.000	0.000	1.207	-	1.207

Congressional Add Details ($ in Millions, and Includes General Reductions)

	FY 2016	FY 2017
Project: 9999: *Congressional Adds*		
Congressional Add: *Small Business Technology Insertion*	12.069	0.000
Congressional Add: *New Design SSN SBIR (Cong)*	24.138	0.000
Congressional Add Subtotals for Project: 9999	36.207	0.000
Congressional Add Totals for all Projects	36.207	0.000

Change Summary Explanation

The FY 2016 reprogramming was an adjustment to the program due to under-execution.

The FY 2016 congressional reduction was for SBIR.

The FY 2017 (1947) funding request was increased to support ongoing tasking, specifically the South Dakota Improvement Program.

The FY 2018 (1950) request was reduced by $15.095 million to shift funding to BLI 0942 in support recapitalization of the Naval Foundry Propulsor Center (NFPC) ensuring continued support of Virginia Class Rotors.

The FY 2018 (1947) funding request was reduced by $16.725 million to account for the availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 1947 / *New Design SSN HM&E*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1947: *New Design SSN HM&E*	1,400.471	76.040	83.586	82.506	-	82.506	58.059	43.711	48.906	49.793	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 516

A. Mission Description and Budget Item Justification

This project encompasses all the ship system development efforts for the VIRGINIA Class Submarine and the Technology Insertion Program for reducing cost and upgrading performance of future hulls by virtue of improvements in ship systems. Technology development implementation and logistics for developmental items, and VIRGINIA Class test & evaluation are included. The thrust of these efforts will be to develop and apply multiple advanced system technologies which are integrated into the design of the VIRGINIA Class Submarine. Technologies developed in this program will be considered for applicability to the COLUMBIA Program (ORP) for commonality opportunities. New technologies are being transitioned from industry and government research and development programs where doing so offers substantial performance improvement and/or affordability payoffs. Transition opportunities include those from the Defense Advanced Research Projects Agency (DARPA) Sensors & Payloads program and Office of Naval Research (ONR) Future Naval Capabilities Program.

The FY 2019 and 2020 budget increases over PB 2017 request to rephase material procurement completion efforts, installation planning for the South Dakota Insertion Program (SDIP), initiating new engineering efforts based on OPNAV direction for advanced payload system integration into VIRGINIA Class platforms, and to support a SSN and Block V FOT&E.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: New Design SSN HM&E	56.721	79.595	78.435	0.000	78.435
Articles:	-	-	-	-	-

FY 2016 Accomplishments:

Continued development of prototype systems which will lead to at sea demonstration by execution of SDIP on an SSN to be installed during Post Shakedown Availability (PSA). Completed preliminary design of all necessary systems and subsystem components required to support the installation on SSN. Initiated critical item qualification testing. Conducted risk reduction efforts and refine prototype designs. Initiated procurement of long lead materials to support production of prototype systems. Initiated planning for full scale testing of improvements during post availability period. Transitioned development, material qualification, and prototype manufacturing efforts. Continued development of concepts and technologies for Reduced Total Ownership Cost (RTOC) and integration into VIRGINIA Class technical baseline. Continued to address emergent reliability issues associated with HM&E components. Continued HM&E obsolescence redesign for future ships. Continued transition of products from the Office of Naval Research Manufacturing Technology Program (MANTECH).

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continued the transition of products from the Office of Naval Research (ONR) Future Naval Capability (FNC) Program ***FY 2017 Plans:*** Complete detailed design and risk reduction efforts of SDIP prototype systems. Continue qualification testing of all system subcomponents. Complete detailed installation and arrangement drawings for shipboard demonstration. Oversee expanded design/build efforts between shipbuilder and qualified vendors for material design acceptance, fabrication and qualification. Integrate quality control solutions into component design/ build process. Begin production of all system components and installation fixtures. Continue planning for full scale testing of improvements during post availability period. Transition development, material qualification, and prototyped development efforts for the Improved Advanced Hybrid (IAH) propulsor for planned full scale demonstration. Continue to address emergent reliability issues associated with HM&E components. Continue HM&E obsolescence redesign for future ships. Continue transition of products from the Office of Naval Research Manufacturing Technology Program (MANTECH). Continue the transition of products from the Office of Naval Research (ONR) Future Naval Capability (FNC) Program. ***FY 2018 Base Plans:*** Complete procurement of subsystem components in support of SDIP installation. Complete detailed availability planning for the PSA installation of SDIP changes. Continue planning and design necessary for SDIP technologies insertion into the VIRGINIA Class baseline for new construction hulls. Continue development of HM&E systems concepts, technologies and obsolescence redesign for integration into VIRGINIA Class Block V Technical Baseline. Complete initial efforts and initiate new engineering efforts based on OPNAV direction for advanced payload system integration into VIRGINIA Class platforms. Continue transition of products from the Office of Naval Research Manufacturing Technology Program (MANTECH). Continue the transition of products from the Office of Naval research (ONR) Future Naval Capability (FNC) Program. ***FY 2018 OCO Plans:*** N/A					
Title: TEST AND EVALUATION	19.319	3.991	4.071	0.000	4.071
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued work associated with previous test events. This consisted mainly of documenting and testing fixes to deficiencies identified by COTF as well as addressing recommendations from DOT&E. Finished the detailed planning for Block III FOT&E. The testing is required by a regulatory requirement to demonstrate effectiveness of the affordability enhancements that were included in all Block III submarines. The Block III contract included					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
significant changes, including redesigning the bow section to contain a Large Aperture Bow (LAB) Array instead of a sonar sphere and two VIRGINIA Payload Tubes (VPT) instead of twelve Vertical Launch System (VLS) tubes. The VIRGINIA Class Mission Areas that will be tested in FY17 are Strike Warfare, Anti-Submarine Warfare, Anti-Surface Warfare, Intelligence, Surveillance, Reconnaissance and Cybersecurity. Purchased materials (including Exercise Torpedoes) and secured test ranges to complete Mission Area testing. Prepared for Strike testing that is necessary to support Cruise Missile Material Certification. The program will launch two missiles during the test event. The Flight Test will certify Block III submarines to load and shoot Tomahawk Missiles. Started development of the Block V with VIRGINIA Payload Module (VPM) Test and Evaluation Master Plan (TEMP) 1425 Rev. H by defining scope of required testing.					
FY 2017 Plans: Continue work associated with previous test events. This consists mainly of documenting and testing fixes to deficiencies identified by COTF as well as addressing recommendations from DOT&E. Complete Block III FOT&E (will consist of scenarios that require operations in deep water, littoral, and high contact density OPAREAS). The testing is required by a regulatory requirement to demonstrate effectiveness of the affordability enhancements that were included in all Block III. The Block III contract included significant changes, including redesigning the bow section to contain a Large Aperture Bow (LAB) Array instead of a sonar sphere and two VPTs instead of twelve VLS tubes. The VIRGINIA Class Mission Areas that will be tested in FY17 are Strike Warfare (which will consist of the operational flight test of two (2) Tomahawk Missiles), Anti-Submarine and Anti-Surface Warfare (which will consist of the operational firing of sixteen (16) exercise torpedoes, their recovery, along with associated environmental monitoring and countermeasure use), Intelligence, Surveillance, Reconnaissance (which will consist of comparison of the ship's ability to track contacts in a high contact density environment with shore radar data to compare with ship's data) and Cybersecurity (consisting of off hull and on hull penetration testing using Naval Information and Operations Command (NIOC) team to perform the cooperative, penetration and adversarial assessment testing) shore to ship, as well as ship to shore testing. Complete all post-test analysis and publish required reports prior to the first Block III submarine commencing deployed operations. Complete development of the Block V with VPM TEMP 1425 Rev. H and submit for signature. Procure required equipment and commence cable installation to support establishment of an Underwater Electro-Magnetic Range in PACFLT to support VIRGINIA Class submarines home ported in Pearl Harbor.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue work associated with previous test events. This consists mainly of documenting and testing fixes to deficiencies identified by COTF as well as addressing recommendations from DOT&E. In addition commence initial efforts to develop DOT&E for Block V. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	76.040	83.586	82.506	0.000	82.506

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN/2013: *Virginia Class Submarine*	5,318.210	4,955.219	5,225.911	-	5,225.911	7,181.369	7,209.343	6,534.775	5,263.896	48,161.837	150,856.478
• OMN/0204283N: *Sub Ops & Safety*	31.500	22.984	25.247	-	25.247	26.606	27.164	27.900	28.459	Continuing	Continuing
• OPN/0942: *Virginia Class Support Equipment*	35.747	66.838	46.610	-	46.610	68.388	29.751	24.422	24.103	Continuing	Continuing
• RDTEN/0604580N: *(U)Virginia Payload Module (VPM)*	162.168	97.920	72.861	-	72.861	0.000	0.000	0.000	0.000	0.000	496.454

Remarks

D. Acquisition Strategy

The VIRGINIA Class Submarine Program has implemented Integrated Product and Process Development (IPPD). The traditional distinct phasing of the design process has been replaced with the continuous concurrent engineering IPPD process. The IPPD approach has facilitated a smoother transition from design to manufacturing and has reduced the number of changes typically encountered during construction of the lead and early follow-on ships. In September 1997, Congress passed a law allowing Electric Boat (EB) and Northrop Grumman Newport News (NGNN), now Huntington Ingalls Industries (HII), to team for production of the first four VIRGINIA Class Submarines. Under the teaming agreement, EB remained the design yard for the VIRGINIA Class Submarine and HII became a part of the IPPD process. The Program Office is managing two Multi-Year Procurement (MYP) contracts. The first is for the Block III (FY09-13) ships. The second is for the Block IV (FY14-18) ships awarded April 2014. All Block I & II ships (SSNs 774-783) have been delivered. The first three Block III ships, SSN 784 SSN 785 and SSN 786, delivered in August 2014, June 2015 and August 2016 respectively, with the remaining five ships awarded and under construction. The first eight Block IV ships are awarded and under construction, with the remaining two to be authorized and appropriated in FY 2018. The program is currently planning for the fourth MYP (Block V) contract that will reflect 10 SSNs (FY19-23) and is anticipated to award in Early FY 2019.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

E. Performance Metrics

Successful completion of Final Operational Test and Evaluation (FOT&E) for Block III modifications. SDIP design completion.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 1947 / *New Design SSN HM&E*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Component Development	WR	NSWC : Carderock, MD	240.467	12.162	Nov 2015	6.000	Nov 2016	5.960	Nov 2017	-		5.960	Continuing	Continuing	Continuing
Component Development	WR	NUWC : Newport, RI	111.232	3.793	Nov 2015	2.840	Nov 2016	1.599	Nov 2017	-		1.599	Continuing	Continuing	Continuing
Component Development	WR	NRL : Washington, DC	7.018	1.282	Nov 2015	0.230	Nov 2016	0.370	Nov 2017	-		0.370	Continuing	Continuing	Continuing
Component Development	C/CPFF	Electric Boat : Groton, CT	751.709	32.447	Nov 2015	70.525	Nov 2016	68.201	Nov 2017	-		68.201	Continuing	Continuing	Continuing
Component Development	SS/CPFF	Applied Research Laboratory : Penn State University	23.071	1.117	Dec 2015	0.000		1.085	Dec 2017	-		1.085	Continuing	Continuing	Continuing
Component Development	SS/FP	National Shipbuilding Research Program : Not Specified	3.845	0.894	Mar 2016	0.000		0.500	Mar 2018	-		0.500	Continuing	Continuing	Continuing
Component Development	Various	Miscellaneous : Not Specified	18.924	5.027	Dec 2015	0.000		0.720	Dec 2017	-		0.720	Continuing	Continuing	Continuing
		Subtotal	1,156.266	56.722		79.595		78.435		-		78.435	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation - DT&E	WR	NSWC : Carderock, MD	92.648	0.370	Nov 2015	0.190	Nov 2016	0.153	Nov 2017	-		0.153	Continuing	Continuing	Continuing
Test and Evaluation - LFT&E	WR	NSWC : Carderock, MD	3.047	0.850	Nov 2015	0.850	Nov 2016	0.000		-		0.000	1.700	6.447	-
Test and Evaluation - DT&E	WR	NUWC : Newport, RI	126.752	10.603	Nov 2015	0.300	Nov 2016	1.157	Nov 2017	-		1.157	Continuing	Continuing	Continuing
Test and Evaluation - OT&E	PO	COMOPTEVFOR : Norfolk, VA	16.813	0.670	Nov 2015	0.690	Nov 2016	0.711	Nov 2017	-		0.711	Continuing	Continuing	Continuing
Test and Evaluation - LFT&E	C/CPFF	Electric Boat : Groton, CT	1.745	0.125	Dec 2015	0.250	Dec 2016	0.250	Dec 2017	-		0.250	Continuing	Continuing	Continuing
Test and Evaluation - DT&E	WR	PMA 280 : Pax River, MD	3.200	2.538	Dec 2015	0.000		0.000		-		0.000	0.000	5.738	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 1947 / *New Design SSN HM&E*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation - DT&E	C/CPFF	NUWC : Newport, RI - CORE Team	0.000	4.162	May 2016	1.711	Dec 2016	1.800	Jan 2018	-		1.800	0.000	7.673	-
		Subtotal	244.205	19.318		3.991		4.071		-		4.071	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,400.471	76.040		83.586		82.506		-		82.506	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

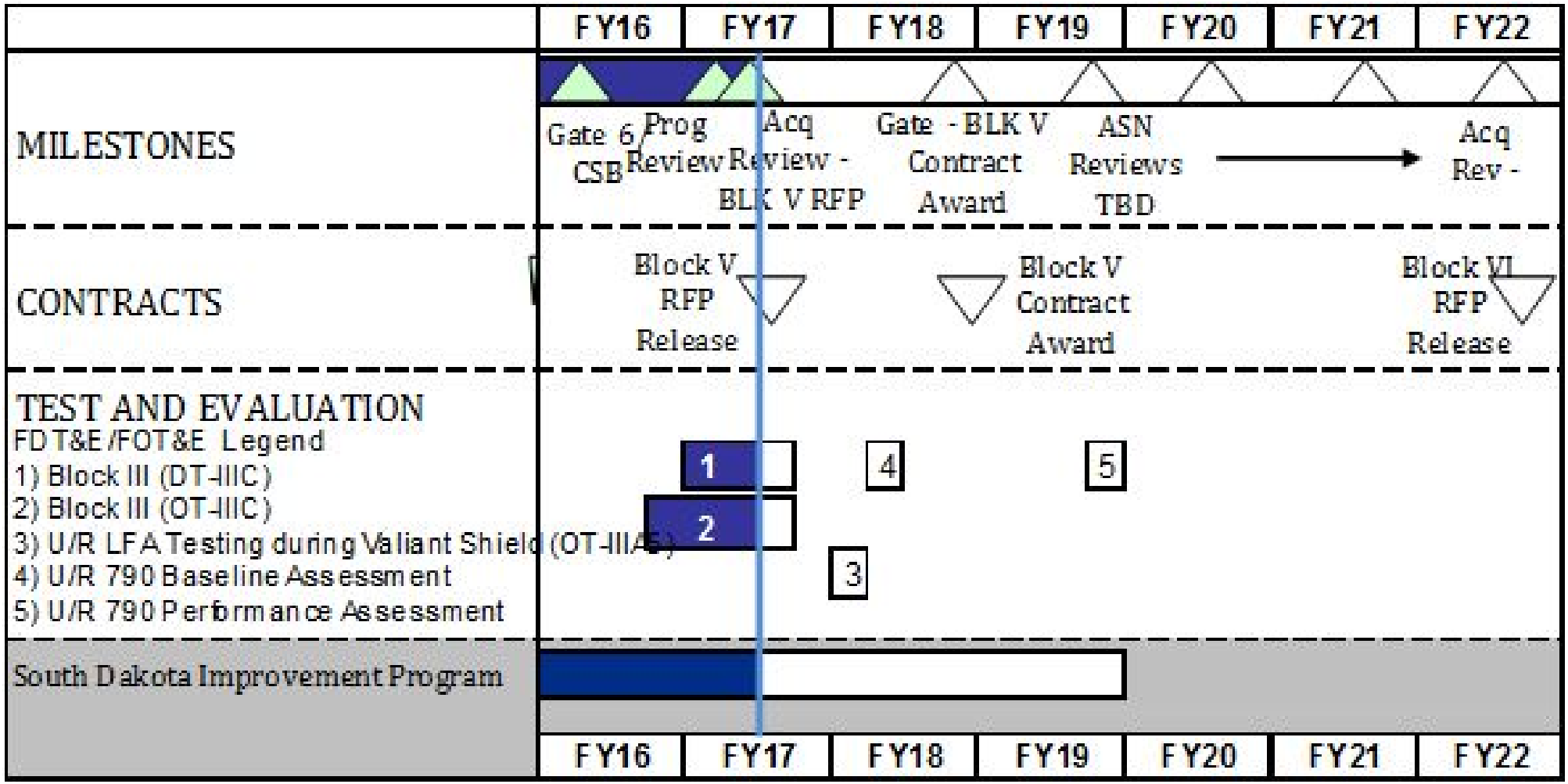

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1947 / *New Design SSN HM&E*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1947				
MILESTONE: Gate 6 CSB	2	2016	2	2016
MILESTONE: Prog Review	1	2017	1	2017
MILESTONE: Acquisition Review - BLK V RFP	2	2017	2	2017
MILESTONE: Gate - BLK V Contract Award	4	2018	4	2018
MILESTONE: ASN Reviews (annual) (TBD)	4	2019	4	2022
CONTRACTS: Block V RFP Release	3	2017	3	2017
CONTRACTS: Block V Contract Award	4	2018	4	2018
CONTRACTS: Block VI RFP Release	4	2022	4	2022
TEST & EVALUATION: Block III (DT-IIIC)	4	2016	3	2017
TEST & EVALUATION: Block III (OT-IIIC)	2	2016	3	2017
TEST & EVALUATION: U/R LFA Testing during Valiant Shield (OT-IIIAS)	1	2018	2	2018
TEST & EVALUATION: U/R 790 Baseline Assessment	2	2018	3	2018
TEST & EVALUATION: U/R 790 Performance Assessment	3	2019	4	2019
SOUTH DAKOTA Improvement Program	1	2016	4	2019

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 1950 / *New Design SSN Combat Sys Dev*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1950: *New Design SSN Combat Sys Dev*	859.423	30.667	26.977	34.913	-	34.913	39.342	36.348	37.088	37.823	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 516

A. Mission Description and Budget Item Justification

This project provides the engineering development required to outfit each ship of the VIRGINIA Class Submarine with a combat system which satisfies ORD requirements in all 7 mission areas, namely; ASW, STRIKE, ISR, Covert Mine Warfare, Battle Group Support, ASUW, and Special Warfare. The fully integrated combat system, otherwise referred to as the Non-Propulsion Electronics System (NPES), is composed of a collection of functional sub-systems, such as sonar, navigation, exterior communications, weapons launch, Large Vertical Array, Submarine Warfare Federated Tactical System (SWFTS) virtualization, Electronic Warfare Next Generation Architecture, etc., which evolve over the life of the program due to either competitive selection of new suppliers, component obsolescence replacement, increased technical performance, or improvements in reliability. Non-recurring engineering activity is needed to perform platform integration of the components, software modification to accommodate electronic data exchange, unique submarine environment qualification and update of all logistics products.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: C3I Systems Engineering	12.183	12.695	14.587	0.000	14.587
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Completed critical design of the BPS-17 Radar and initiated qualification testing. Initiated preliminary sub-system design for the replacement inertial navigation system targeted for inclusion in the Blk IV contract ship deliveries. Continued preliminary design for the South Dakota Improvement Program (SDIP).					
FY 2017 Plans: Conduct testing of the SSN792 BPS-17 Radar system installed at the shipbuilding off-hull and assembly test site. Continue critical sub-system design of the replacement inertial navigation system targeted for inclusion in the Blk IV contract commencing with SSN798. Initiate SDIP design, and develop FY18/FY19 plans and contracts to complete Test and Integration, test fixture development, upgrade of the data recording server, and maintenance strategy/ILS product development for this equipment.					
FY 2018 Base Plans: Initiate full-ship integration testing of the SSN792 BPS-17 Radar system dockside. Continue SDIP design, specific activities include hardware/software integration, Environmental Qualification Test and System Design Certification Test. Test fixture development, and ILS product development for this equipment. Develop Next					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1950 / *New Design SSN Combat Sys Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Generation Architecture-Electronic Warfare System (NGA-EW) for the VA Class replacement of the obsolete AN/BLQ-10A. Funds development of the ISR mission dependent efforts required to deliver EW NGA capability programmed for BLK IV mid-block insertion. ***FY 2018 OCO Plans:*** N/A					
Title: Sonar Combat Control and Architecture Subsystems ***Articles:*** ***Description:*** Continued the development of S/CC/A System Improvements to maintain VIRGINIA Class Commonality to backfit fleet. ***FY 2016 Accomplishments:*** Continued the development and C3I system level integration of the TI14/APB13 configuration slated for the last 4 hulls of the Block III contract (SSN788-791). Continued the multi-year migration of the interface software from Common Object Request Broker Architecture (CORBA) to Advanced Message Queuing Protocol (AMQP) to mitigate obsolescence. Continued environmental qualification testing of the TI14 pedigree hardware. ***FY 2017 Plans:*** Initiate development and C3I system level integration of the TI14/APB15 configuration slated for the first hull of the Block IV contract (SSN792). Continue the multi-year migration of the interface software from CORBA to AMQP to mitigate obsolescence. Complete environmental qualification testing of the TI14 pedigree hardware. ***FY 2018 Base Plans:*** Initiate development and C3I system level integration of the TI16/APB15 configuration slated for hulls 3-6 of the Block IV contract (SSN794-SSN797). Initiates the first NPES/SWFTS architectural design change since 1996 open systems standardization and program inception. Continue the multi-year migration of the interface software from CORBA to AMQP to mitigate obsolescence. Initiate environmental qualification testing of the TI16 pedigree hardware. Begin the development roadmap and initiate design of the tactical architecture which enables virtualization of as many combat system functional components as practical and operationally effective, spanning the TI-18 to TI-22 implementation timeframe. ***FY 2018 OCO Plans:*** N/A	18.484 -	14.282 -	20.326 -	0.000 -	20.326 -
Accomplishments/Planned Programs Subtotals	30.667	26.977	34.913	0.000	34.913

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1950 / *New Design SSN Combat Sys Dev*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN/2013: *VA CL*	5,318.210	4,955.219	5,225.911	-	5,225.911	7,181.369	7,209.343	6,534.775	5,263.896	48,161.837	150,856.478
• O&M,N/0204283N: *Sub Ops & Safety*	31.355	23.828	25.738	-	25.738	27.175	27.731	29.305	0.000	Continuing	Continuing
• OPN/0942: *VA CL Support Equipment*	35.747	66.838	46.610	-	46.610	68.388	29.751	24.422	24.103	Continuing	Continuing
• RDT&E/0604580N: *Virginia Payload Module*	162.168	97.920	72.861	-	72.861	0.000	0.000	0.000	0.000	0.000	496.454

Remarks

D. Acquisition Strategy

The VIRGINIA Class Submarine Program has implemented Integrated Product and Process Development (IPPD). The traditional distinct phasing of the design process has been replaced with the continuous concurrent engineering IPPD process. The IPPD approach has facilitated a smoother transition from design to manufacturing and has reduced the number of changes typically encountered during construction of the lead and early follow-on ships. In September 1997, Congress passed a law allowing Electric Boat (EB) and Northrop Grumman Newport News (NGNN), now Huntington Ingalls Industries (HII), to team for production of the first four VIRGINIA Class Submarines. Under the teaming agreement, EB remained the design yard for the VIRGINIA Class Submarine and HII became a part of the IPPD process. The Program Office is managing two Multi-Year Procurement (MYP) contracts. The first is for the Block III (FY09-13) ships. The second is for the Block IV (FY14-18) ships awarded April 2014. All Block I & II ships (SSNs 774-783) have been delivered. The first two Block III ships, SSN 784 and SSN 785, delivered in August 2014 and June 2015 respectively, with the remaining six ships awarded and under construction. The first six Block IV ships are awarded and under construction, with the remaining four to be authorized and appropriated in FY 2017 and FY 2018. The program is currently planning for the fourth MYP (Block V) contract that will reflect 10 SSNs (FY19-23) and is anticipated to award in Early FY 2019.

E. Performance Metrics

Successful completion of Final Operational Test and Evaluation (FOT&E) for Block III modifications. SDIP design completion.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 1950 / *New Design SSN Combat Sys Dev*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PTR Corrections	Various	Various : Various	30.088	0.000		0.000		0.000		-		0.000	0.000	30.088	-
Unique Virginia Class Improvements	Various	Various : Various	68.197	9.627	Nov 2015	9.932	Feb 2017	4.345	Feb 2018	-		4.345	Continuing	Continuing	Continuing
Advanced Display Sys (AN/UYQ-70)	SS/CPIF	Lockheed Martin : Keyport, WA	36.589	1.200	Nov 2015	0.000	Feb 2017	0.000		-		0.000	0.000	37.789	-
Tech Insertion/Advanced Processing Build (TI/APB) Integration	Various	Various : TBD	0.000	0.000		0.000		3.949	Nov 2017	-		3.949	Continuing	Continuing	Continuing
Photonics	C/CPIF	Kollmorgen : Northampton, MA	59.269	1.782	May 2016	0.650	Jan 2017	0.000		-		0.000	0.000	61.701	-
Large Vertical Array South Dakota Improvement Program	Various	Various : TBD	0.000	0.000		0.000		4.518	Nov 2017	-		4.518	Continuing	Continuing	Continuing
Platform Integration	SS/CPFF	Electric Boat : Groton, CT	50.943	1.617	Nov 2015	2.450	Nov 2016	2.621	Nov 2017	-		2.621	Continuing	Continuing	Continuing
Photonics	C/CPIF	Lockheed Martin : Manassas, VA	0.000	0.000		0.000		0.500	Nov 2017	-		0.500	Continuing	Continuing	Continuing
Electronic Support Measures	C/FFP	Lockheed Martin : Syracuse, NY	38.067	0.000		0.000		0.000		-		0.000	0.000	38.067	-
Virtualization Enabling Architecture Development	Various	Various : TBD	0.000	0.000		0.000		4.318	Nov 2017	-		4.318	Continuing	Continuing	Continuing
Technology Refreshment	Various	Various : Various	20.355	0.000		0.000		0.000		-		0.000	0.000	20.355	-
Technical Direction Agent	WR	NUWC : Newport, RI	303.651	7.489	Jan 2016	7.550	Nov 2016	6.222	Nov 2017	-		6.222	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Carderock, MD	12.853	0.906	Nov 2015	0.690	Nov 2016	0.220	Nov 2017	-		0.220	Continuing	Continuing	Continuing
Technology Refreshment/ Info. Assurance	C/CPFF	Progeny Systems : Manassas, VA	38.405	2.030	Nov 2015	0.810	Jan 2017	0.000		-		0.000	0.000	41.245	-
Acoustic Intercept & Sonar	C/CPFF	Progeny Applied : Manassas, VA	0.000	0.000		0.000		0.500	Nov 2017	-		0.500	Continuing	Continuing	Continuing
High Frequency & Sonar Sensors	C/CPFF	Applied Research Lab : University of Texas	0.000	0.000		0.000		0.300	Nov 2017	-		0.300	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 1950 / *New Design SSN Combat Sys Dev*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Next Generation Architecture - Electronic Warfare System	WR	NSMA : Various	0.000	0.000		0.000		4.145	Nov 2017	-		4.145	Continuing	Continuing	Continuing
Systems Engineering	WR	SSC : Charleston, SC	8.168	0.559	Nov 2015	0.550	Nov 2016	0.800	Nov 2017	-		0.800	Continuing	Continuing	Continuing
Systems Engineering	WR	NUWC : Keyport, WA	11.536	0.354	Nov 2015	0.895	Nov 2016	0.800	Nov 2017	-		0.800	Continuing	Continuing	Continuing
Miscellaneous	Various	Various : Various	142.159	2.183	Nov 2015	1.350	Feb 2017	0.675	Feb 2018	-		0.675	Continuing	Continuing	Continuing
		Subtotal	820.280	27.747		24.877		33.913		-		33.913	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Various	Various	Various : TBD	6.212	0.000		0.000		0.000		-		0.000	0.000	6.212	-
		Subtotal	6.212	0.000		0.000		0.000		-		0.000	0.000	6.212	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Support Services/ETS	C/CPAF	SEAPORT : Rockville, MD	32.736	2.920	Dec 2015	2.100	Dec 2016	1.000	Dec 2017	-		1.000	Continuing	Continuing	Continuing
DAWDF	Various	Various : Various	0.195	0.000		0.000		0.000		-		0.000	0.000	0.195	-
		Subtotal	32.931	2.920		2.100		1.000		-		1.000	-	-	-

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	859.423	30.667		26.977		34.913		-		34.913	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1950 / *New Design SSN Combat Sys Dev*

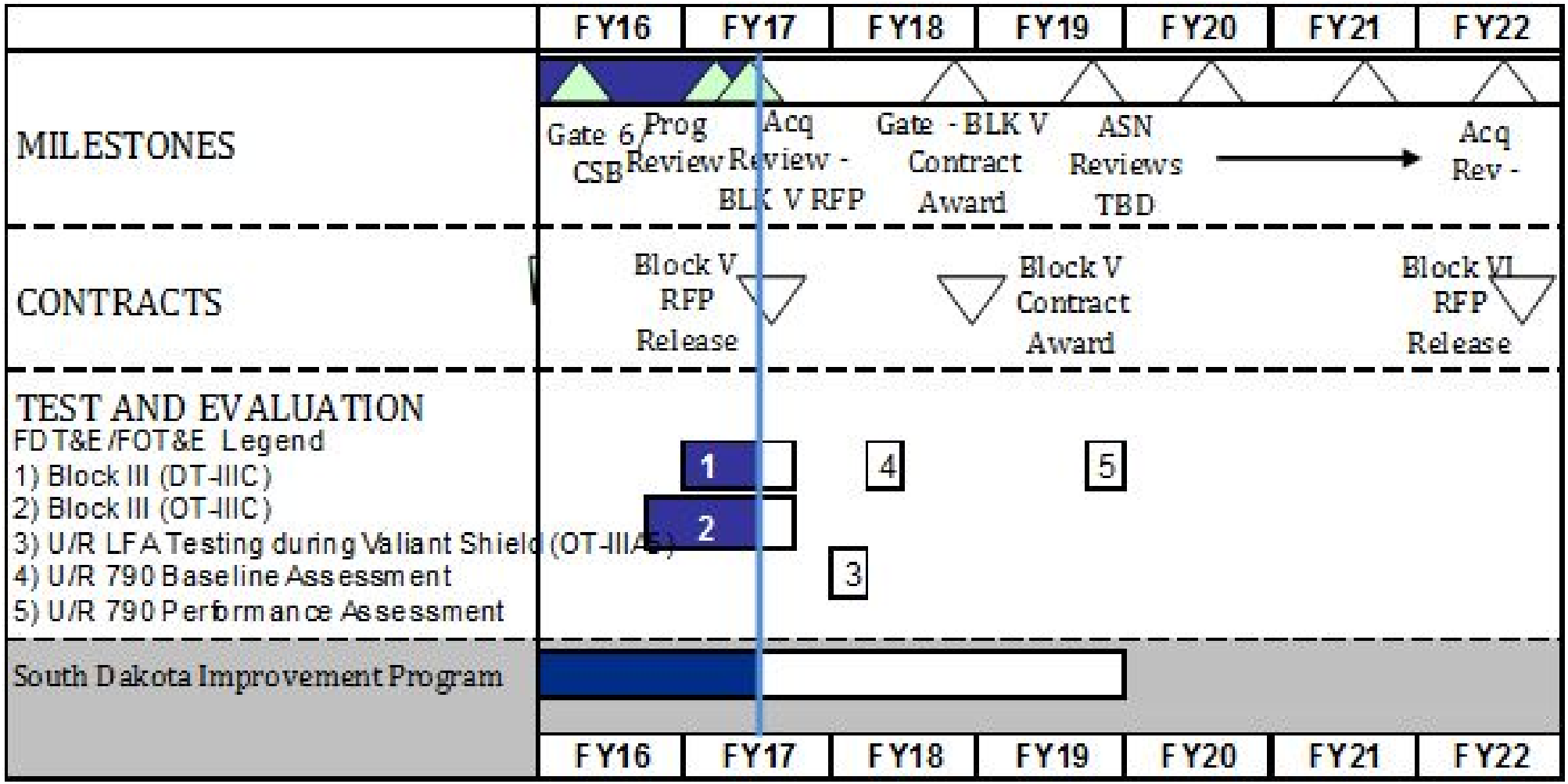

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 1950 / *New Design SSN Combat Sys Dev*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1950				
MILESTONE: Gate 6 CSB	2	2016	2	2016
MILESTONE: Prog Review	1	2017	1	2017
MILESTONE: Acquisition Review - BLK V RFP	2	2017	2	2017
MILESTONE: Gate - BLK V Contract Award	4	2018	4	2018
MILESTONE: ASN Reviews (annual) (TBD)	4	2019	4	2022
CONTRACTS: Block V RFP Release	3	2017	3	2017
CONTRACTS: Block V Contract Award	4	2018	4	2018
CONTRACTS: Block VI RFP Release	4	2022	4	2022
TEST & EVALUATION: Block III (DT-IIIC)	4	2016	3	2017
TEST & EVALUATION: Block III (OT-IIIC)	2	2016	3	2017
TEST & EVALUATION: U/R LFA Testing during Valiant Shield	1	2018	2	2018
TEST & EVALUATION: U/R 790 Baseline Assessment	2	2018	3	2018
TEST & EVALUATION: U/R 790 Performance Assessment	3	2019	4	2019
SOUTH DAKOTA Improvement Program	1	2016	4	2019

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 3062 / *Submarine Multi-Mission Team Trainer*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3062: *Submarine Multi-Mission Team Trainer*	32.289	7.528	2.450	2.668	-	2.668	2.715	2.773	2.834	2.891	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

To achieve desired submarine force readiness levels, it is necessary to construct highly sophisticated shore based Combat System Team Trainers capable of training personnel in all aspects of submarine approach, attack and surveillance operations in a controlled, simulated environment. The Combat Control System (CCS) MK1, CCS MK2, and AN/BYG-1, along with sonar systems AN/BSY-1, AN/BQQ-5, and AN/BQQ-10 are installed on SSN and SSGN class submarines. These tactical systems are planned for future upgrades with the next hardware and software revisions which will provide enhanced War Fighter capabilities. The Tactical Acoustic Rapid COTS (commercial-off-the-shelf) Insertion (ARCI) phased upgrades are also being installed with future revisions. The Advanced Processing Builds (APB) and Technical Insertion (TI) sensors, which feed technology insertion into the CCS/Acoustic development, directly impact the trainers.

The Submarine Multi-Mission Team Trainer (SMMTT) supports operator, employment, strike, and Battle Group training for enlisted and officer pipelines. The SMMTT provides operators and combat teams the opportunity to train ashore, prior to, and between deployments. The shore based training provides a means of maintaining team proficiency in stand alone or in combined team mode prior to ship deployment.

FY-16 RDTE,N Line 3062 was increased in support of SSBN Modernization. This funding executed the development, test and evaluation of new sensors and stimulation/simulation hardware and software required to integrate with tactical systems to build new SSBN Attack Centers.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Submarine Multi-Mission Team Trainer	7.528	2.450	2.668	0.000	2.668
Articles:	-	-	-	-	-
Description: To achieve desired submarine force readiness levels, it is necessary to construct highly sophisticated shore based Combat System Team Trainers capable of training personnel in all aspects of submarine approach, attack and surveillance operations in a controlled, simulated environment.					
FY 2016 Accomplishments: Develop implementation of latest Advanced Processor Build (APB), Technical Insertion (TI) and associated training displays. These efforts include new sensor developments and simulations to match advancements in tactical systems supported by SMMTT. These efforts will also integrate the APB into the SMMTT baseline along with completing and integrating the Low Cost Conformal Array (LCCA) sensor. In addition, the 3062 RDTEN					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604558N / *New Design SSN*	**Project (Number/Name)** 3062 / *Submarine Multi-Mission Team Trainer*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
line was increased in support of SSBN Modernization. This funding will be used for the development, test and evaluation of new sensors and stimulation/simulation hardware and software required to integrate with tactical systems to build new SSBN Attack Centers. ***FY 2017 Plans:*** Develop implementation of latest Advanced Processor Build (APB), Technical Insertion (TI) and associated training displays. These efforts include new sensor developments and simulations to match advancements in tactical systems supported by SMMTT. These efforts will also integrate the APB into the SMMTT baseline along with completing and integrating the LCCA sensor. ***FY 2018 Base Plans:*** Develop implementation of latest Advanced Processor Build (APB), Technical Insertion (TI) and associated training displays. These efforts include new sensor developments and simulations to match advancements in tactical systems supported by SMMTT. These efforts will also integrate the APB into the SMMTT baseline along with completing and integrating the LCCA sensor. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	7.528	2.450	2.668	0.000	2.668

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/5661: *Submarine Training Device Mods*	0.000	48.020	74.550	-	74.550	66.708	76.169	70.674	81.220	Continuing	Continuing

Remarks

D. Acquisition Strategy

The SMMTT program software development is accounted for in this RDTEN line. All production kits are procured in OPN PE 0804731N BLI 566100.

E. Performance Metrics

Within 90 days of introduction to the Fleet, this RDTEN project shall develop required changes to the Control and Display Documentation and Interface Description Language (IDL) Interfaces for the initial development for new sensors that are required to simulate/stimulate the TI/APB for the AN/BQQ-5 and AN/BYG-1 in the SMMTT Trainer.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604558N / *New Design SSN*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9999: *Congressional Adds*	14.505	36.207	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	50.712
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The FY16 RDT&E Congressional add for small business technology insertion will be applied to existing small business contracts to continue VA Class combat systems development in the areas of sonar, electronic warfare, weapons systems launch, information assurance and advanced submarine control systems.

The FY16 RDT&E Congressional add for New Design SSN SBIR (Cong) is for VA Class submarine hydro-dynamic enhancements.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017
Congressional Add: Small Business Technology Insertion ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A	12.069	0.000
Congressional Add: New Design SSN SBIR (Cong) ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A	24.138	0.000
Congressional Adds Subtotals	36.207	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Successful completion of Milestone III Review. Successful completion of Final Operational Test and Evaluation (FOT&E) for Technology Insertion (TI)-08 and Block III.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604562N *I Submarine Tactical Warfare System*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	540.261	51.054	43.160	50.850	-	50.850	62.064	64.991	66.284	67.568	Continuing	Continuing
0236: *SSN Comb Cont Sys Imprvmnt (ENG)*	540.261	41.882	43.160	50.850	-	50.850	62.064	64.991	66.284	67.568	Continuing	Continuing
9999: *Congressional Adds*	0.000	9.172	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.172

A. Mission Description and Budget Item Justification

Project Unit 0236: This program develops Commercial-Off-The-Shelf (COTS) based software and hardware upgrades to integrate improved tactical and weapons control capabilities for multiple submarine Classes (SSN-688, SSGN, SEAWOLF, SSBN and VIRGINIA (Post Shakedown Availability)). The AN/BYG-1 is the combat control system common across submarine platforms which incorporates tactical control, payload control, and tactical Local Area Network (LAN) functions into a single development program. AN/BYG-1 allows the submarine to rapidly update the ship safety tactical picture, integrate the common tactical picture into the battlegroup, improve torpedo interfaces, and provide Tactical TOMAHAWK (TOMAHAWK Block IV) capability. The hardware upgrades, Technology Insertions (TI) are developed on a biennial basis to provide improved capability and address COTS obsolescence. Funding also accommodates the biennial integration of software Advanced Processing Builds (APB) for both tactical control (APB(T)) and payload control (APB(P)) subsystems. The tactical control integration effort incorporates the integration of other sensor (ESM, sonar, radar, etc.) inputs to provide a common operational picture and improved situational awareness in an information assurance (IA) compliant environment. The Weapon Control development effort described in PB-16 has been renamed Payload Control to account for non-weaponized unmanned vehicles. The payload control development effort provides improvements to the payloads control subsystem based on improvements to missiles and torpedoes as well as development of a modernized Payload Control System (PCS) architecture to support various payload such as, but not limited to, Modular Undersea Heavyweight Vehicle (MUHV), Unmanned Undersea Vehicles, Unmanned Aerial Systems (UAS), torpedoes, and Sub Launched Mobile Mines (SLMM). Provides funding for the development of Payloads Launch System, Multi-tube Weapons System (MTWS), Information Assurance (IA) system, Onboard Team Trainer (OBTT), and Command, Control, Computer and Intelligence Maintenance Tool (C3IMT). FY 18 adds development of a Common Infrastructure Services (CIS) subsystem. This involves integration of Onboard Team Trainer - Master Controller (OBTT - MC) & Command, Control, Computer and Intelligence Maintenance Tool (C3IMT)/Inter-Subsystem Monitoring Tool (ISMT) efforts as well as other common services within SWFTS. CIS will be an independent subsystem with its own software development and testing efforts, requiring additional funding to complete product delivery to platforms.

FY18 also integrates additional Tactical Data Link (TDL) capabilities for Command & Control situational awareness. In FY19, additional R&D effort to develop WCS architecture, support MK48, APB 5+, and APB 6 efforts as well as development of CyberSafe Controls.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604562N *I Submarine Tactical Warfare System*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	52.713	43.160	49.629	-	49.629
Current President's Budget	51.054	43.160	50.850	-	50.850
Total Adjustments	-1.659	0.000	1.221	-	1.221
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.659	0.000			
• Program Adjustments	0.000	0.000	1.250	-	1.250
• Rate/Misc Adjustments	0.000	0.000	-0.029	-	-0.029

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2016	FY 2017
Project: 9999: *Congressional Adds*		
Congressional Add: *Combat and Weapons Systems Modernization*	9.172	0.000
Congressional Add Subtotals for Project: 9999	9.172	0.000
Congressional Add Totals for all Projects	9.172	0.000

Change Summary Explanation

Added $1.250 million of FY 2018 funding for integration of additional Tactical Data Link (TDL) capabilities for Command & Control situational awareness.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604562N / *Submarine Tactical Warfare System*	Project (Number/Name) 0236 / *SSN Comb Cont Sys Imprvmnt (ENG)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0236: *SSN Comb Cont Sys Imprvmnt (ENG)*	540.261	41.882	43.160	50.850	-	50.850	62.064	64.991	66.284	67.568	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project Unit 0236: This program develops Commercial-Off-The-Shelf (COTS) based software and hardware upgrades to integrate improved tactical and weapons control capabilities for multiple submarine Classes (SSN-688, SSGN, SEAWOLF, SSBN and VIRGINIA (Post Shakedown Availability)). The AN/BYG-1 is the combat control system common across submarine platforms which incorporates tactical control, payload control, and tactical Local Area Network (LAN) functions into a single development program. AN/BYG-1 allows the submarine to rapidly update the ship safety tactical picture, integrate the common tactical picture into the battlegroup, improve torpedo interfaces, and provide Tactical TOMAHAWK (TOMAHAWK Block IV) capability. The hardware upgrades, Technology Insertions (TI) are developed on a biennial basis to provide improved capability and address COTS obsolescence. Funding also accommodates the biennial integration of software Advanced Processing Builds (APB) for both tactical control (APB(T)) and payload control (APB(P)) subsystems. The tactical control integration effort incorporates the integration of other sensor (ESM, sonar, radar, etc.) inputs to provide a common operational picture and improved situational awareness in an information assurance (IA) compliant environment. The Weapon Control development effort described in PB-16 has been renamed Payload Control to account for non-weaponized unmanned vehicles. The payload control development effort provides improvements to the payloads control subsystem based on improvements to missiles and torpedoes as well as development of a modernized Payload Control System (PCS) architecture to support various payload such as, but not limited to, Modular Undersea Heavyweight Vehicle (MUHV), Unmanned Undersea Vehicles, Unmanned Aerial Systems (UAS), torpedoes, and sub launched mobile mines (SLMM). Provides funding for the development of Payloads Launch System, Multi-tube Weapons System (MTWS), Information Assurance (IA) system, Onboard Team Trainer (OBTT), and Command, Control, Computer and Intelligence Maintenance Tool (C3IMT). FY 18 adds development of a Common Infrastructure Services (CIS) subsystem. This involves integration of Onboard Team Trainer - Master Controller (OBTT - MC) & Command, Control, Computer and Intelligence Maintenance Tool (C3IMT)/Inter-Subsystem Monitoring Tool (ISMT) efforts as well as other common services within SWFTS. CIS will be an independent subsystem with its own software development and testing efforts, requiring additional funding to complete product delivery to platforms.

FY18 also integrates additional Tactical Data Link (TDL) capabilities for Command & Control situational awareness. In FY19, additional R&D effort to develop WCS architecture, support MK48, APB 5+, and APB 6 efforts as well as development of CyberSafe Controls.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Advanced Processing Builds	18.955	15.735	20.945	0.000	20.945
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604562N / *Submarine Tactical Warfare System*	**Project (Number/Name)** 0236 / *SSN Comb Cont Sys Imprvmnt (ENG)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Completed APB-15 development and integration into AN/BYG-1 (TI-14) baseline. Support development of APB-17 into AN/BYG-1 baseline. ***FY 2017 Plans:*** Continue development of APB-17 into AN/BYG-1 (TI-16) baseline. ***FY 2018 Base Plans:*** Complete development of APB-17 into AN/BYG-1 (TI-16) baseline. Support development of APB-19 into AN/BYG-1 baseline. Included in the APB effort for FY 18 is the addition of the SSBN software baseline needed for the conversion of the SSBN Combat Control System from legacy to the TI/APB model. FY 18 also adds development of a Common Infrastructure Services (CIS) subsystem. This involves integration of Onboard Team Trainer - Master Controller (OBTT - MC) & Command, Control, Computer and Intelligence Maintenance Tool (C3IMT)/Inter-Subsystem Monitoring Tool (ISMT) efforts as well as other common services within SWFTS. CIS will be an independent subsystem with its own software development and testing efforts, requiring additional funding to complete product delivery to platforms. ***FY 2018 OCO Plans:*** N/A					
Title: AN/BYG-1 TI-14 ***Articles:*** ***FY 2016 Accomplishments:*** Completed development, integration and test of the next generation AN/BYG-1 (TI-14) for SSN 688/VA Class submarines. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	4.887 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: AN/BYG-1 TI-18	0.000	4.570	8.178	0.000	8.178

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604562N / *Submarine Tactical Warfare System*	**Project (Number/Name)** 0236 / *SSN Comb Cont Sys Imprvmnt (ENG)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A ***FY 2017 Plans:*** Begin development, integration and test of the next generation AN/BYG-1 (TI-18) for SSN 688/SSGN/SSBN Class submarines. ***FY 2018 Base Plans:*** Continue development, integration and test of the next generation AN/BYG-1 (TI-18) for SSN 688/SSGN/SSBN Class submarines. ***FY 2018 OCO Plans:*** N/A					
Title: AN/BYG-1 TI-16	6.508	6.782	3.996	0.000	3.996
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued development, integration and test of the next generation AN/BYG-1 (TI-16) for SEAWOLF/SSBN/VA Class submarines. ***FY 2017 Plans:*** Continue development, integration and test of the next generation AN/BYG-1 (TI-16) for SEAWOLF/SSBN/VA Class submarines. ***FY 2018 Base Plans:*** Complete development, integration and test of the next generation AN/BYG-1 (TI-16) for SSN SEAWOLF/SSBN/VA Class submarines. ***FY 2018 OCO Plans:*** N/A					
Title: Testing	2.900	3.987	3.113	0.000	3.113
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604562N / *Submarine Tactical Warfare System*	**Project (Number/Name)** 0236 / *SSN Comb Cont Sys Imprvmnt (ENG)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Began DT/OT for AN/BYG-1 APB-15 on SSN 688/SEAWOLF/SSBN/VA Class submarines. ***FY 2017 Plans:*** Complete DT/OT for AN/BYG-1 APB-15 on SSN 688/SEAWOLF/SSBN/VA Class submarines. ***FY 2018 Base Plans:*** Begin DT/OT for AN/BYG-1 APB-17 on SSN 688/SEAWOLF/SSBN/SSGN/VA Class submarines. ***FY 2018 OCO Plans:*** N/A					
Title: Payload Control System Upgrade	5.100	5.911	7.806	0.000	7.806
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued development process to modernize the Payload Control System architecture to support various payloads. ***FY 2017 Plans:*** Continue development process to modernize the Payload Control System architecture to support various payloads. ***FY 2018 Base Plans:*** Complete development to modernize the Payload Control System architecture to support various payloads. FY18 is a ramp up in effort to modernize the Payload Control System Architecture and contains additional efforts to integrate new payloads and integrate of a common UxV interface. ***FY 2018 OCO Plans:*** N/A					
Title: Information Assurance (IA)	3.532	3.603	4.190	0.000	4.190
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Developed integration of IA Toolkit and continue IA Certification Testing on BYG-1 TI-16 ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604562N / *Submarine Tactical Warfare System*	**Project (Number/Name)** 0236 / *SSN Comb Cont Sys Imprvmnt (ENG)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Complete integration of IA Toolkit and continue IA Certification Testing on BYG-1 TI-16 ***FY 2018 Base Plans:*** Develop integration of IA Toolkit and continue IA Certification Testing on BYG-1 TI-18. FY18 growth is a result of implementation of additional cyber security requirements and initiatives from the implementation of CYBERSAFE including the development of Cyber Conditions of Readiness (X, Y, Z), the implementation of Risk Management Framework (RMF), the execution of Cybersecurity Vulnerability Assessments and the addition of new of SPAWAR IT/IA standards (host level protection, boundary protection, security information &, event management and more). ***FY 2018 OCO Plans:*** N/A					
Title: Unmanned Aerial System (UAS) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Begin Unmanned Aerial System (UAS) development and integration efforts. ***FY 2018 Base Plans:*** Continue Unmanned Aerial System (UAS) development and integration efforts. ***FY 2018 OCO Plans:*** N/A	0.000 -	2.572 -	2.622 -	0.000 -	2.622 -
Accomplishments/Planned Programs Subtotals	41.882	43.160	50.850	0.000	50.850

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/5420: *SSN Combat Control Systems*	96.040	144.715	129.972	-	129.972	150.750	177.643	259.455	239.264	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604562N / *Submarine Tactical Warfare System*	**Project (Number/Name)** 0236 / *SSN Comb Cont Sys Imprvmnt (ENG)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost

Remarks

OPN BA4 Ordinance Support & Equipment. BLI 5420 SSN Combat Control Systems

D. Acquisition Strategy

This budget integrates APBs developed by the advanced development community.
This program has been tailored in accordance with the new DoD5000 directive to incorporate annual MDA production reviews.
Advanced Processing Builds (APB) products associated with AN/BYG-1 Release-To-Fleet 3Q 2017, 3Q 2019 and 3Q 2021.

E. Performance Metrics

AN/BYG-1 Submarine Combat and Payload Control System performance metrics for each Advanced Processor Build (APB) and Technology Insertion (TI) cycle are contained in the classified Capability Production Document (CPD) annex to the overarching system requirements as laid out in the Capabilities Development Document (CDD). Each APB cycle receives an updated CPD based on fleet required capabilities.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604562N / *Submarine Tactical Warfare System*	Project (Number/Name) 0236 / *SSN Comb Cont Sys Imprvmnt (ENG)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/BYG-1 TECH INSERTION	C/CPIF	GENERAL DYNAMICS (GDAIS) : FAIR LAKES, VA	90.221	5.147	Oct 2015	5.250	Oct 2016	6.645	Oct 2017	-		6.645	Continuing	Continuing	Continuing
AN/BYG-1 TECH INSERTION	C/CPIF	GENERAL DYNAMICS (GDAIS) : PITTSFIELD, MA	38.100	3.233	Oct 2015	0.661	Oct 2016	0.200	Oct 2017	-		0.200	Continuing	Continuing	Continuing
AN/BYG-1 TECH INSERTION	C/CPIF	PROGENY (PCS) : MANASSAS, VA	0.000	1.616	Oct 2015	2.164	Oct 2016	6.537	Oct 2017	-		6.537	Continuing	Continuing	Continuing
GOVERNMENT ENGINEERING	WR	NUWC : NEWPORT, RI	82.152	1.399	Oct 2015	1.427	Oct 2016	1.812	Oct 2017	-		1.812	Continuing	Continuing	Continuing
INFORMATION ASSURANCE	C/CPAF	PROGENY : MANASSAS, VA	33.723	3.532	Oct 2015	3.603	Oct 2016	4.190	Oct 2017	-		4.190	Continuing	Continuing	Continuing
UNMANNED AERIAL SYSTEM	C/CPIF	GENERAL DYNAMICS : FAIR LAKES, VA	0.000	0.000		1.087	Oct 2016	0.432	Oct 2017	-		0.432	Continuing	Continuing	Continuing
UNMANNED AERIAL SYSTEM	WR	NUWC : NEWPORT, RI	0.000	0.000		1.061	Oct 2016	1.082	Oct 2017	-		1.082	Continuing	Continuing	Continuing
UNMANNED AERIAL SYSEM	C/CPIF	PROGENY (PCS) : MANASSAS, VA	0.000	0.000		0.424	Oct 2016	1.108	Oct 2017	-		1.108	Continuing	Continuing	Continuing
		Subtotal	244.196	14.927		15.677		22.006		-		22.006	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
APB SOFTWARE INTEGRATION	C/CPIF	GENERAL DYNAMICS (GDAIS) : FAIRLAKES, VA	74.256	7.157	Oct 2015	7.300	Oct 2016	7.446	Oct 2017	-		7.446	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604562N / *Submarine Tactical Warfare System*	Project (Number/Name) 0236 / *SSN Comb Cont Sys Imprvmnt (ENG)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
APB SOFTWARE INTEGRATION	C/CPIF	GENERAL DYNAMICS : PITTSFIELD, MA	22.195	5.055	Oct 2015	0.600	Oct 2016	0.272	Oct 2017	-		0.272	Continuing	Continuing	Continuing
APB SOFTWARE INTEGRATION	WR	NUWC : NEWPORT, RI	49.327	4.835	Oct 2015	4.672	Oct 2016	4.765	Oct 2017	-		4.765	Continuing	Continuing	Continuing
APB SOFTWARE INTEGRATION	C/CPAF	LOCKHEED MARTIN (LM-MSS) : MANASSAS, VA	12.280	2.400	Oct 2015	3.600	Oct 2016	3.672	Oct 2017	-		3.672	Continuing	Continuing	Continuing
APB SOFTWARE INTEGRATION	C/CPFF	PROGENY (PCS) : MANASSAS, VA	0.000	0.870	Oct 2015	4.208	Oct 2016	4.705	Oct 2017	-		4.705	Continuing	Continuing	Continuing
SOFTWARE DEVELOPMENT	Various	VARIOUS : VARIOUS:Not Specified	49.973	1.902	Oct 2015	2.283	Oct 2016	2.329	Oct 2017	-		2.329	Continuing	Continuing	Continuing
		Subtotal	208.031	22.219		22.663		23.189		-		23.189	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DEVELOPMENT TEST & EVALUATION	WR	NUWC : NEWPORT, RI	36.181	0.932	Oct 2015	0.949	Oct 2016	0.968	Oct 2017	-		0.968	Continuing	Continuing	Continuing
TEST & EVALUATION	C/CPIF	GENERAL DYNAMICS : FAIRLAKES, VA	8.697	0.711	Oct 2015	0.724	Oct 2016	0.739	Oct 2017	-		0.739	Continuing	Continuing	Continuing
TEST & EVALUATION	C/CPIF	GENERAL DYNAMICS : PITTSFIELD, MA	2.801	0.711	Oct 2015	0.724	Oct 2016	0.739	Oct 2017	-		0.739	Continuing	Continuing	Continuing
TEST & EVALUATION	C/CPAF	PROGENY : MANASSAS, VA	1.373	0.466	Oct 2015	0.474	Oct 2016	0.483	Oct 2017	-		0.483	Continuing	Continuing	Continuing
OPERATIONAL TEST & EVALUATION	WR	COMOPTEVFOR : NORFOLK, VA	16.753	0.079	Oct 2015	0.080	Oct 2016	0.820	Oct 2017	-		0.820	Continuing	Continuing	Continuing
		Subtotal	65.805	2.899		2.951		3.749		-		3.749	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604562N / *Submarine Tactical Warfare System*	Project (Number/Name) 0236 / *SSN Comb Cont Sys Imprvmnt (ENG)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PROGRAM MANAGEMENT SUPPORT	C/CPFF	VARIOUS : VARIOUS:Not Specified	22.229	1.837	Oct 2015	1.869	Oct 2016	1.906	Oct 2017	-		1.906	Continuing	Continuing	Continuing
		Subtotal	22.229	1.837		1.869		1.906		-		1.906	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	540.261	41.882		43.160		50.850		-		50.850	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604562N / *Submarine Tactical Warfare System*	**Project (Number/Name)** 0236 / *SSN Comb Cont Sys Imprvmnt (ENG)*

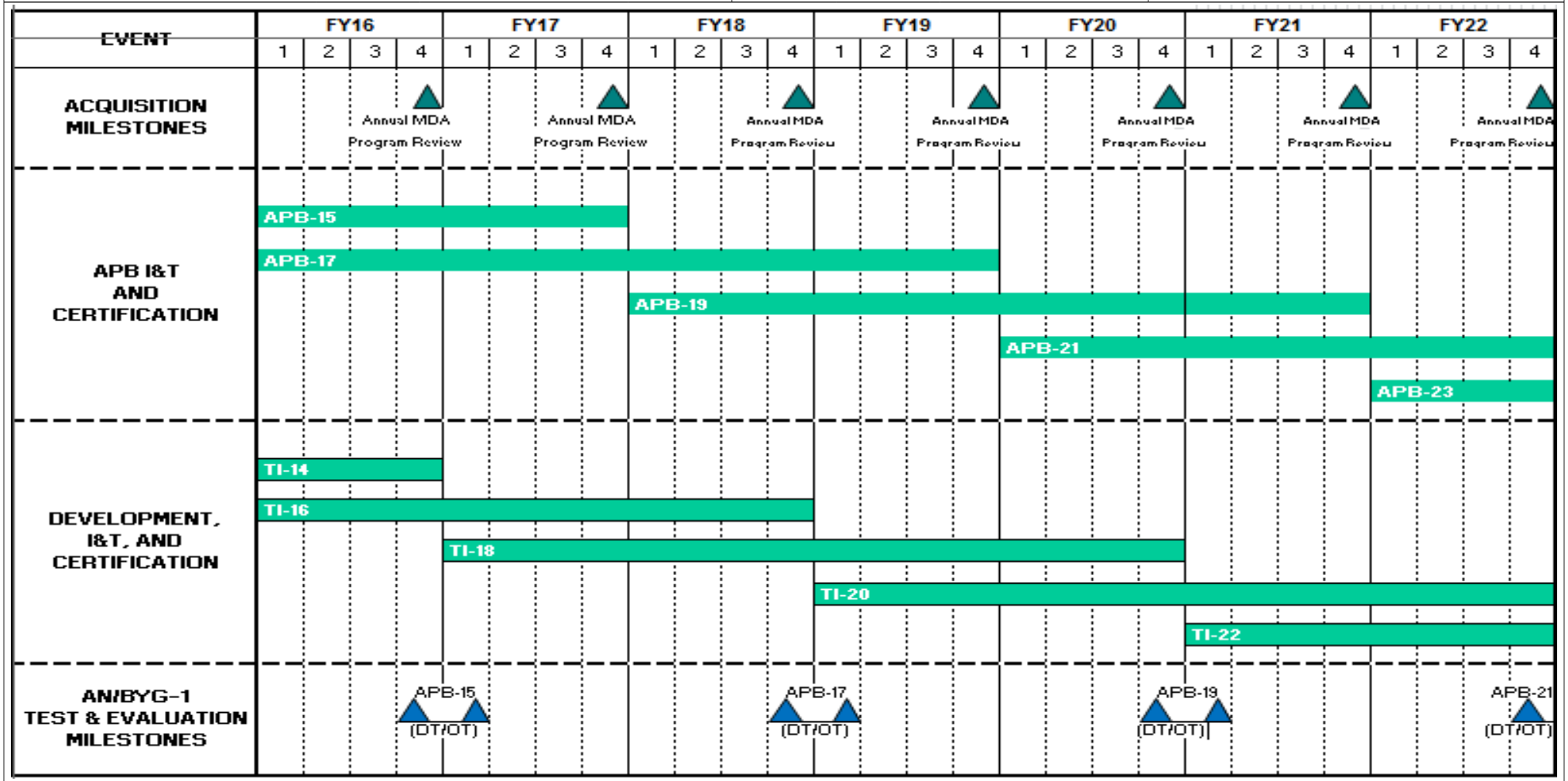

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604562N / *Submarine Tactical Warfare System*	**Project (Number/Name)** 0236 / *SSN Comb Cont Sys Imprvmnt (ENG)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Page 1				
Acq Milestones: Annual MDA Program Review - FY16	4	2016	4	2016
Acq Milestones: Annual MDA Program Review - FY17	4	2017	4	2017
Acq Milestones: Annual MDA Program Review - FY18	4	2018	4	2018
Acq Milestones: Annual MDA Program Review - FY19	4	2019	4	2019
Acq Milestones: Annual MDA Program Review - FY20	4	2020	4	2020
Acq Milestones: Annual MDA Program Review - FY21	4	2021	4	2021
Acq Milestones: Annual MDA Program Review - FY22	4	2022	4	2022
APB I&T, Certification: APB-15: APB-15	1	2016	4	2017
APB I&T, Certification: APB-17: APB-17	1	2016	4	2019
APB I&T, Certification: APB-19: APB-19	1	2018	4	2021
APB I&T, Certification: APB-21: APB-21	1	2020	4	2021
APB I&T, Certification: APB-23: APB-23	4	2022	4	2022
Development, I&T Certification: TI-14: TI-14	1	2016	4	2016
Development, I&T Certification: TI-16: TI-16	1	2016	4	2018
Development, I&T Certification: TI-18: TI-18	1	2017	4	2020
Development, I&T Certification: TI-20: TI-20	1	2019	4	2021
Development, I&T Certification: T-22: TI-22	1	2021	4	2021
Test & Evaluation Milestones: AN/BYG-1: APB-15 DT/OT	4	2016	1	2017
Test & Evaluation Milestones: AN/BYG-1: APB-17 DT/OT	4	2018	1	2019
Test & Evaluation Milestones: AN/BYG-1: APB-19 DT/OT	4	2020	1	2021
Test & Evaluation Milestones: AN/BYG-1: APB-21 DT/OT	4	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604562N / *Submarine Tactical Warfare System*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	9.172	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.172
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project Unit 9999:

This congressional add provides funding to modernize Combat and Weapons Systems in the efforts below.

Attack in a Minute (AIM): Continue development of this Fleet desired capability for APB17. Complete algorithm development. Update new display with inputs from Fleet. Execute demonstrations to ensure the updates meet the Fleet needs.

Cyber Security: Complete Vulnerability Assessment and manage results. Develop corrections for Account Management. Accelerate CYBERSAFE Control Point hardening and Tactics, Techniques and Procedures (TTP) development. Resolve training issues with Type Commanders.

Weapon Control Advanced Message Queuing Protocol (AMQP) transitions: Common Object Request Broker Architecture (CORBA) middleware will become unsupported in 2020. There is a SWFTS roadmap planning all system middleware transitions. This effort modernizes portions of the WC middleware to AMQP, the latest standard.

WCS Code Modernization with The Software Revolution, Inc. (TSRI): The effort will select additional WC code portions and translate them from ADA to C++.

APB5+: Effort accelerates software updates to support the new PMS404 torpedo.

Common Infrastructure Services (CIS): Design network updates so common functions are more readily available to systems using them. Virtualize some applications which will reside in the CIS footprint.

Combat System of the Future (CSOF): Accelerate ongoing efforts to virtualize BYG-1 and improve open architecture.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017
Congressional Add: Combat and Weapons Systems Modernization	9.172	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604562N / *Submarine Tactical Warfare System*	**Project (Number/Name)** 9999 / *Congressional Adds*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017
FY 2016 Accomplishments: N/A ***FY 2017 Plans:*** N/A		
Congressional Adds Subtotals	9.172	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Once developed, these modernization upgrades will be part of the TI/APB software baselines, utilizing the same Acquisition Strategy as the Tactical Warfare System.
The program budget integrates APBs developed by the advanced development community.
This program has been tailored in accordance with the new DoD5000 directive to incorporate annual MDA production reviews.
Advanced Processing Builds (APB) products associated with AN/BYG-1 Release-To-Fleet 3Q 2017, 3Q 2019 and 3Q 2021.

E. Performance Metrics

AN/BYG-1 Submarine Combat and Payload Control System performance metrics for each Advanced Processor Build (APB) and Technology Insertion (TI) cycle are contained in the classified Capability Production Document (CPD) annex to the overarching system requirements as laid out in the Capabilities Development Document (CDD). Each APB cycle receives an updated CPD based on Fleet required capabilities.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604567N *I Ship Contract Design/ Live Fire T&E*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	608.706	38.060	63.311	67.166	-	67.166	69.618	53.390	55.474	56.550	Continuing	Continuing
1803: *Ship Contract Design*	124.947	7.866	2.209	3.880	-	3.880	3.226	3.298	3.372	3.438	Continuing	Continuing
2465: *LHA(R) FLT Design and Total Ship Integration*	241.976	8.326	9.488	8.169	-	8.169	14.639	2.488	6.078	6.194	Continuing	Continuing
3108: *CVN 80 Total Ship Integration*	0.000	0.977	30.103	33.195	-	33.195	32.220	27.904	26.147	26.647	Continuing	Continuing
3179: *CVN-79 Total Ship Integration*	172.286	13.035	17.081	16.953	-	16.953	14.894	15.207	15.509	15.806	Continuing	Continuing
3369: *Hybrid Electric Drive*	7.814	3.717	0.000	0.986	-	0.986	0.518	0.266	0.000	0.000	0.000	13.301
3374: *MPF(F)*	0.000	0.000	0.694	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.694
4007: *CVN 21 LFT&E*	61.683	4.139	3.736	3.983	-	3.983	4.121	4.227	4.368	4.465	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 333, 223												

A. Mission Description and Budget Item Justification

This Program Element (PE) directly supports the Navy's Shipbuilding Plan by providing for the development of engineering, programmatic and acquisition documentation including ship specifications (including performance specifications) and contractual documentation associated with acquisition of Navy ships. This PE also supports the Congressionally mandated Live Fire Test and Evaluation (LFT&E) program for new ship designs.

Contract Design has traditionally been the engineering development of the technical and contractual definition of the ship design (including ship specifications and drawings) to a level of detail sufficient for shipbuilders to make a sound estimate of the construction cost and schedule. Additionally, the contract design package developed under this PE has provided the technical baseline from which the Navy selects the shipbuilder who then develops the detail design package required to support the construction and eventual delivery of the ship. This PE also supports the development of design methodologies/tools which facilitate and optimize the transition from ship design documents to efficient production of new ships and ship conversions, and supports engineering planning and ship affordability studies.

Under Acquisition Reform for new design ships, traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering Integrated Product and Process Development (IPPD) process extending through and after contract award. This serves to maintain the focus of multi-discipline teams consisting of the government,
shipbuilder, system programs, and suppliers. Government/Industry Integrated Product Team(s) (IPTs) will utilize the IPPD process to develop the design in an Integrated Product and Data Environment (IPDE). The design approach is part of an acquisition strategy that is based on commercial practices and incorporates a phased technical definition.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604567N *I Ship Contract Design/ Live Fire T&E*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	38.925	65.002	67.591	-	67.591
Current President's Budget	38.060	63.311	67.166	-	67.166
Total Adjustments	-0.865	-1.691	-0.425	-	-0.425
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.865	0.000			
• Program Adjustments	0.000	-1.691	-1.513	-	-1.513
• Rate/Misc Adjustments	0.000	0.000	1.088	-	1.088

Change Summary Explanation

FY17:
PROJ 3369: $1.691M removed from Hybrid Electric Drive (HED) to offset Navy FY17 request for additional appropriations.

FY18:
PROJ 3369: $1.503M removed from Hybrid Electric Drive (HED) due to reduced effort.
PROJ 3374: $0 in FY18 reflects reestablishment of the National Defense Sealift Fund (NDSF) Appropriation (BA 04 PE 0408042N, Project 3110 (Maritime Prepositioning Force (Future).

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / *Ship Contract Design/ Live Fire T&E*	Project (Number/Name) 1803 / *Ship Contract Design*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1803: *Ship Contract Design*	124.947	7.866	2.209	3.880	-	3.880	3.226	3.298	3.372	3.438	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

DDG Modernization:
The major effort is the engineering development of the technical and contractual definition of the ship's design (e.g. ship specifications and drawings), with sufficient details for the planning yard to make a sound estimate of cost and schedule. It also serves as the technical definition from which the planning yard develops the detailed design and testing package required to build and test the ship. It provides the Navy with a digital, ship design knowledge base, including lessons learned, required to ensure that a proper development, analysis and evaluation can be conducted of any current or future planned.

Another area this project funds is the development of specific Navy ship criteria and standards for newly developed technologies. Additionally, as new laws are passed, new safety regulations and environmental criteria are developed and other legal/Congressional requirements identified, this project funds the translation into Navy ship design criteria
and standards. This project also funds the translation of the traditional Ship Specifications into performance-based criteria, which supports the development of design methodologies/tools which facilitate and optimize the transition from ship design documents to ship alterations. This project also supports ship survivability studies, superstructure integrity analysis, developmental and operational testing, gun weapon system software integration and next generation Machinery Control System (MCS) software integration.

Expeditionary Mobile Base (ESB) (formerly MLP AFSB)
Funds are for performance specification development, and Dynamic Interface Testing for various airframes as part of the ESB Special Operations Forces (SOF) Backfit.

Task Force Cyber Awareness (TFCA) - NAVSEA Boundary Defense Capability:
Computer security upgrades and mitigation for operating machinery, machinery controllers, and machinery control systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Ship Contract Design	2.208	2.209	2.238	0.000	2.238
Articles:	-	-	-	-	-
FY 2016 Accomplishments: For DDGs, specific efforts include, but are not limited to Engineering Analysis, feasibility studies, structural analysis for hull integrity, and information assurance requirements related to the next generation MCS software integration.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 1803 / *Ship Contract Design*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
CG Class specific efforts include, but are not limited to, aluminum cracking studies, superstructure repair planning, sustainment studies, extended service life studies, and new alteration development to ensure CGs are able to reach expected service life as well as information assurance requirements related to the Integrated Ship Control system. Another area this project funds is the development of specific Navy ship criteria and standards for newly developed technologies. Additionally, as new laws are passed, new safety regulations and environmental criteria are developed and other legal/Congressional requirements identified, this project funds the translation into Navy ship design criteria and standards. This project also funds the translation of the traditional Ship Specifications into performance-based criteria, which supports the development of design methodologies/tools which facilitate and optimize the transition from ship design documents to ship alterations. ***FY 2017 Plans:*** Continue ship design and alteration development for superstructure cracking/aluminum sensitization in CG's and for DDG 51 Flt IIA ship design to include development of structural reliability and other alterations to include helo hangar door reliability improvements in FY 17. ***FY 2018 Base Plans:*** Continue ship design and alteration development for superstructure cracking/aluminum sensitization and HM&E network upgrades in CG's and for DDG 51 Flt IIA ship design to include development of structural reliability and other alterations to include machinery control systems improvements in FY 18. ***FY 2018 OCO Plans:*** N/A					
Title: ESB	3.663	0.000	1.642	0.000	1.642
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Performance Spec development for Expeditionary Mobile Base (ESB) 3 (formerly MLP AFSB 3) SOF Equipment. Initial planning for SOF PDT&T Dynamic Interface Testing (CV-22, MH-60, MQ-8C),SESEF, and E3 testing in support of SOF backfit effort was completed. Execute SOF PDT&T, including Dynamic Interface Testing (CV-22, MH-60, MQ-8C), SESEF, and E3 testing. Conduct Follow-on Operational Test & Evaluation (FOT&E), if required. Some FY16 efforts will continue into FY17. ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 1803 / *Ship Contract Design*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 Base Plans:*** Complete ESB FOT&E, if required. Complete ESB 3 final reporting for all test events pertaining to SOF efforts. Execute ESB 4 SOF PDT&T and complete final reporting. ***FY 2018 OCO Plans:*** N/A					
Title: Boundary Defense Capability ***Articles:*** ***FY 2016 Accomplishments:*** Begin efforts to implement external boundary cyber defense capability. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	1.995 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	7.866	2.209	3.880	0.000	3.880

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN 0900: *DDG Mod*	421.195	432.766	603.355	-	603.355	456.218	605.847	582.863	714.483	3,365.248	9,021.982

Remarks

D. Acquisition Strategy

Continuing systems and software development for both development models and production machinery control units at Land Based Engineering Sites.

E. Performance Metrics

CG:

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 1803 / *Ship Contract Design*

Aluminum sensitization study to determine the lifetime until sensitization for aluminum alloys and stress and buckling analysis of the CG 47 Class ship structure, and develop proposed fatigue fixes in the high stress areas to produce a technical report with modifications or improvements to the ship that may be necessary to preclude cracking in the areas of concern. Evaluation of composite patch and development of composite patch installation procedures as a method for repairing cracks. Development of ultrasonic impact treatment guidance as a method for repairing cracks. Evaluation of different coating that can prevent cracking and different aluminum alloys that are sensitization resistant. Additionally, review and track distributed services margins, predict future system loads, develop technical reports and make recommendation to ensure reaching hull service life.

DDG Modernization:
Efforts for DDG Mod include design and development for next generation MCS software integration.

ESB:
Completion of Dynamic Interface Testing.

Task Force Cyber Awareness (TFCA):
NAVSEA Boundary Defense Capability.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / *Ship Contract Design/ Live Fire T&E*	Project (Number/Name) 2465 / *LHA(R) FLT Design and Total Ship Integration*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2465: *LHA(R) FLT Design and Total Ship Integration*	241.976	8.326	9.488	8.169	-	8.169	14.639	2.488	6.078	6.194	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 333

A. Mission Description and Budget Item Justification

This project provides the contract design, development and testing efforts for the Amphibious Assault Ship Replacement Program LHA(R). The LHA (R) is a ship construction program designed to: (1) provide a functional replacement for the Amphibious Assault Ships which reached the end of their extended service lives in FY15 (2) be a key platform in the Amphibious Readiness Group (ARG) of the future and (3) provide for an affordable and sustainable amphibious ship development program. LHA(R) ships will provide forward presence and power projection as an integral part of Joint, inter-agency, and multi-national maritime expeditionary forces. Additionally, LHA(R) will be designed to operate for sustained periods in transit to and operations in an Amphibious Objective Area to include the embarkation, deployment, and landing of a Marine Landing Force in an assault by helicopters and tilt rotors (MV-22) supported by Joint Strike Fighters (F-35B).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: LHA (R) FLT 0 Design and Total Ship Integration - LHA 6	3.098	7.022	1.295	0.000	1.295
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					
LHA 6 Continued Test and Evaluation Master Plan (TEMP) Rev B.					
LHA 6 Completed Vulnerability Assessment Report I (VAR I).					
LHA 6 Continued Operational Test and Evaluation (OT&E).					
LHA 6 Continued evaluating the interoperability data supporting Key Performance Parameters (KPP).					
LHA 6 Continued Development Testing (DT-B3).					
LHA 6 Continued Final Vulnerability Assessment Report (VAR).					
LHA 6 Continued Total Ship Survivability Trial (TSST) preparations.					
LHA 6 Continued LHA Class Reliability Maintainability and Availability (RMA).					
FY 2017 Plans:					
LHA 6 Completed Test and Evaluation Master Plan (TEMP) Rev B.					
LHA 6 Continue Final Vulnerability Assessment Report (VAR).					
LHA 6 Continue Operational Test and Evaluation (OT&E).					
LHA 6 Continue LHA Class Reliability Maintainability and Availability (RMA).					
LHA 6 Complete Development Testing (DT-B3).					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 2465 / *LHA(R) FLT Design and Total Ship Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
LHA 6 Complete evaluation of the interoperability data supporting Key Performance Parameters (KPP). LHA 6 Complete Total Ship Survivability Trial (TSST). ***FY 2018 Base Plans:*** LHA 6 Continue Operational Test and Evaluation (OT&E). LHA 6 Continue LHA Class Reliability Maintainability and Availability (RMA). LHA 6 Complete Final Vulnerability Assessment Report (VAR). ***FY 2018 OCO Plans:*** N/A					
Title: LHA (R) FLT 1 Design and Total Ship Integration - LHA 8	5.228	2.466	6.874	0.000	6.874
Articles:	-	-	-	-	-
FY 2016 Accomplishments: LHA 8 Completed Milestone Documentation and Defense Acquisition Board (DAB) Program Reviews. LHA 8 Continued Test and Evaluation Master Plan (TEMP) Rev B. LHA 8 Continued Operational Test and Evaluation (OT&E) preparations. LHA 8 Continued Vulnerability Assessment Report (VAR). LHA 8 Awarded Planning, Advanced Engineering and Procurement of Long Lead Time Materials. LHA 8 Initiated Enterprise Air Search Radar (EASR) integration efforts. ***FY 2017 Plans:*** LHA 8 Completed Test and Evaluation Master Plan (TEMP) Rev B. LHA 8 Continue Vulnerability Assessment Report (VAR). LHA 8 Continue Enterprise Air Search Radar (EASR) integration efforts. LHA 8 Continue Operational Test & Evaluation preparation for Operational Assessment (OA). LHA 8 Award of the Detail Design and Construction Option. ***FY 2018 Base Plans:*** *Note - Increase is due to planned ramp up of Live Fire Test & Evaluation (LFT&E) efforts required by US Code Title 10 Section 2366, planned ship and combat system integration engineering support for the Enterprise Air Search Radar (EASR) Land Based Test System, and continued Reliability, Maintainability, and Availability (RMA) efforts.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 2465 / *LHA(R) FLT Design and Total Ship Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
The LHA 8 LFT&E increase is a result of expanded data efforts and refinement of vulnerability modeling and simulations to prepare and complete Vulnerability Assessment Reports (VAR). LHA 8 will be tested to survive and continue its mission after sustaining weapon damage specifically related to all design changes (compartmentation, space arrangements, distributed systems, piping, cabling, etc.) not otherwise evaluated using the LHD 8 or LHA 6 designs. LHA 8 Initiate Reliability Maintainability Availability (RMA) analysis. LHA 8 Continue Vulnerability Assessment Report (VAR). LHA 8 Continue Enterprise Air Search Radar (EASR) integration efforts. LHA 8 Continue Operational Test & Evaluation preparation for Operational Assessment (OA). ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	8.326	9.488	8.169	0.000	8.169

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN/3041: *LHA (R) Ships*	476.543	1,623.024	1,710.927	-	1,710.927	0.000	0.000	0.000	0.000	0.000	10,256.297

Remarks

D. Acquisition Strategy

LHA 6 Advanced Procurement and Long Lead Time Material was awarded on a sole source basis to Huntington Ingalls Inc., formerly Northrop Grumman Shipbuilding, on 15 July 2005; LHA 6 Detail Design and Construction (DD&C) was awarded on 1 June 2007. The Advance Procurement and Long Lead Time Material efforts were subsumed by the Fixed Price Incentive, Firm Target DD&C contract.

LHA 7 Advanced Procurement and Long Lead Time Material was awarded on a sole source basis to Huntington Ingalls Inc., formerly Northrop Grumman Shipbuilding, on 30 June 2010; LHA 7 DD&C was awarded on 31 May 2012. The Advanced Procurement and Long Lead Time Material efforts were subsumed by the Fixed Price Incentive, Firm Target DD&C contract.

LHA 8 Planning, Advanced Engineering and Procurement of Long Lead Time Material (LLTM) for an LHA Replacement (LHA(R)) Flight 1 Amphibious Assault Ship was awarded on a competitive basis to Huntington Ingalls Inc. on 30 June 2016. The option for LHA 8 Detail Design and Construction is planned to be exercised in 2017.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 2465 / *LHA(R) FLT Design and Total Ship Integration*

The Planning, Advanced Engineering and Procurement of Long Lead Time Material (LLTM) efforts will be subsumed by the Fixed Price Incentive, Firm Target DD&C contract with the option exercise.

E. Performance Metrics

Successfully achieve Initial Operational Capability, successfully complete Operational Test and Milestone Reviews.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 2465 / *LHA(R) FLT Design and Total Ship Integration*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Ship Design	WR	NSWC : Various	97.905	0.000		0.000		0.000		-		0.000	0.000	97.905	-
Ship Design	C/CPFF	HII : Pascagoula, MS	5.009	0.000		0.000		0.000		-		0.000	0.000	5.009	-
Ship Design	C/CPFF	Various : Various	39.733	4.354	Dec 2015	0.000		0.000		-		0.000	0.000	44.087	-
Special Studies	WR	NSWC : Panama City, FL	4.800	0.000		0.000		0.000		-		0.000	0.000	4.800	-
		Subtotal	147.447	4.354		0.000		0.000		-		0.000	0.000	151.801	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Engineering Services	Various	NSWC : Various	0.000	0.000		2.300	Dec 2016	4.251	Dec 2017	-		4.251	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		2.300		4.251		-		4.251	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	MIPR	JITC : Fort Huachuca, AZ	4.328	0.081	Dec 2015	0.150	Dec 2016	0.000		-		0.000	0.000	4.559	-
Operational Test & Evaluation	WR	OPTEVFOR/ MCOTEA/NAVSUP : Norfolk, VA/ Quantico, VA	16.592	1.386	Dec 2015	3.403	Dec 2016	1.045	Dec 2017	-		1.045	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	WR	NSWC : Various	57.606	1.519	Dec 2015	3.547	Dec 2016	2.785	Dec 2017	-		2.785	Continuing	Continuing	Continuing
		Subtotal	78.526	2.986		7.100		3.830		-		3.830	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / *Ship Contract Design/ Live Fire T&E*	Project (Number/Name) 2465 / *LHA(R) FLT Design and Total Ship Integration*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	C/CPFF	Various : Various	15.310	0.936	Dec 2015	0.046	Dec 2016	0.068	Dec 2017	-		0.068	Continuing	Continuing	Continuing
Travel	Various	Navsea Travel : Washington, DC	0.682	0.050	Dec 2015	0.042	Dec 2016	0.020	Dec 2017	-		0.020	Continuing	Continuing	Continuing
Defense Acquisition Workforce	Various	Various : Various	0.011	0.000		0.000		0.000		-		0.000	0.000	0.011	-
		Subtotal	16.003	0.986		0.088		0.088		-		0.088	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	241.976	8.326		9.488		8.169		-		8.169	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 2465 / *LHA(R) FLT Design and Total Ship Integration*

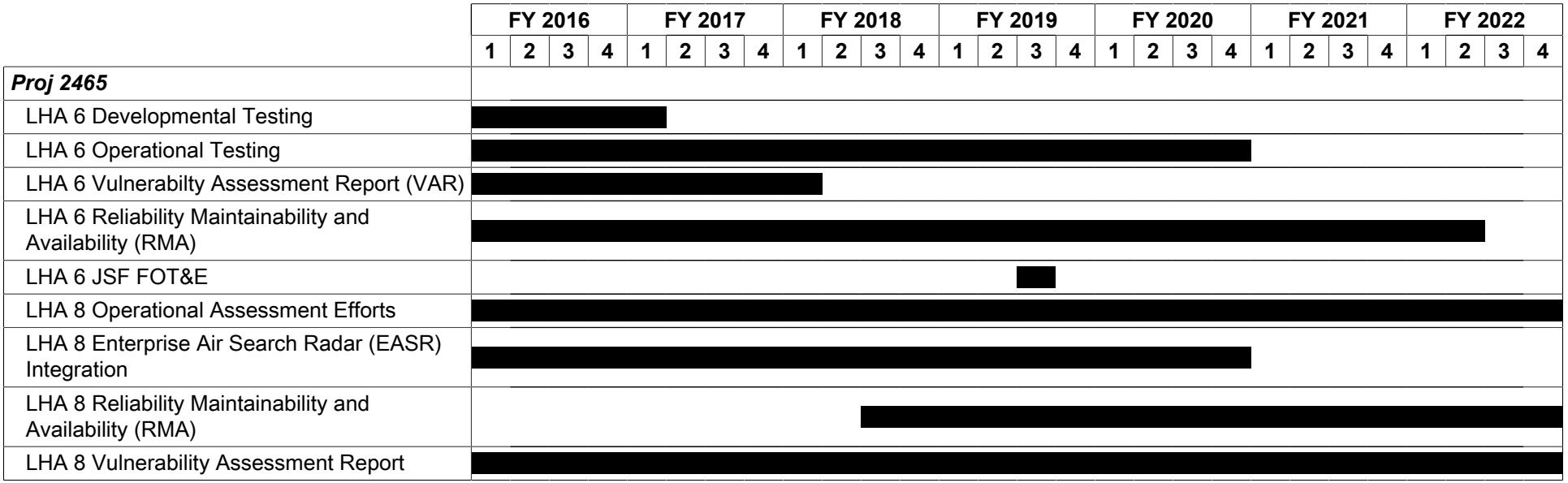

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 2465 / *LHA(R) FLT Design and Total Ship Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2465				
LHA 6 Developmental Testing	1	2016	1	2017
LHA 6 Operational Testing	1	2016	4	2020
LHA 6 Vulnerabilty Assessment Report (VAR)	1	2016	1	2018
LHA 6 Reliability Maintainability and Availability (RMA)	1	2016	2	2022
LHA 6 JSF FOT&E	3	2019	3	2019
LHA 8 Operational Assessment Efforts	1	2016	4	2022
LHA 8 Enterprise Air Search Radar (EASR) Integration	1	2016	4	2020
LHA 8 Reliability Maintainability and Availability (RMA)	3	2018	4	2022
LHA 8 Vulnerability Assessment Report	1	2016	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / *Ship Contract Design/ Live Fire T&E*	Project (Number/Name) 3108 / *CVN 80 Total Ship Integration*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3108: *CVN 80 Total Ship Integration*	0.000	0.977	30.103	33.195	-	33.195	32.220	27.904	26.147	26.647	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 223

A. Mission Description and Budget Item Justification

Development and related testing of CVN 78 Class aircraft carrier specific technologies, the infusion of the ship technology base into existing and future aircraft carriers, and the potential realization of subsystem design capabilities not currently feasible. This project also funds the Contract Design efforts for the CVN 80. This project transitions the minimum sustaining technologies required to address obsolescence, critical survivability shortfalls as identified in CVN 78 Class testing, future requirements, and technologies which did not mature in time to support the CVN 78 or CVN 79. All systems developed in this project have the potential to support emerging requirements and other promising system technologies for insertion into new aircraft carrier designs. The emphasis is directed toward developing ship hull, mechanical, propulsion, electrical, aviation, warfare systems, and combat support systems, sub-systems and components to maintain aircraft carrier affordability, manpower requirements, survivability, and operational capabilities and to meet the requirements of existing and pending regulations and statutes critical to the operation of future aircraft carriers. This project also encompasses those tasks required to support CVN 80 procurement, including, but not limited to engineering support, programmatic and program support, modeling and simulation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Enterprise Air Surveillance Radar (EASR)	0.977	8.489	9.265	0.000	9.265
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Conducted / prepared risk analyses / reports: changes and risk of change to CVN 79 / 80 baseline. Executed Requirements Engineering, Architecture: radar and infrastructure requirements, test planning, and continued the architecture model database including incorporating CVN 78 design updates and evaluated impacts (physical / logical) for system deferral, upgrades, and elimination items. Combat System Testing; conducted test site survey for EASR and EASR Radar Suite elements and integration testing. Conducted study to determine moving CANES to Phase 2 with minimal impact to ship installation and key events. Evaluated and incorporated CFE Networks as part of the DoD Risk Management Framework to support Cyber Security Requirements.					
FY 2017 Plans: Continue conducting / preparing risk reduction studies / reports, to include development of a risk / opportunity database to support future decision-making. Continue conducting technology assessment studies. Execute					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3108 / *CVN 80 Total Ship Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Requirements Engineering and Architecture, including creating a radar specification traceability matrix to the CVN ORD and development and maintenance of a new CVN Warfare System architecture. Conduct ship integration studies for GFI vetting, tracking and delivery. Continue conducting onboard and off-board EMI / EMC studies due to new the radar sensor. Continue analyzing / performing integrated topside design due to new radar sensor. Conduct power interface trade studies based upon radar prime power requirement and conduct trade studies to analyze platform power against transformer design and platform power against cost of ship modification. Continue conducting system integration studies related to the TEMP: platform impacts & updates to TEMP; cybersecurity analysis; ISP updates supporting Net Ready KPP. Continue conducting RMA and ILS Studies, to include trade studies and identification of investment opportunities / requirements. Continue preparing / updating acquisition support documents, cost estimates and the RFP. ***FY 2018 Base Plans:*** Continue conducting / preparing risk reduction studies / reports, to include management of a risk / opportunity database to support future-decision making. Continue conducting technology assessment studies. Continue execution of Requirements Engineering and Architecture, including maintaining a radar specification traceability matrix to the CVN ORD and maintenance of a new CVN Warfare System architecture. Continue to conduct ship integration studies for GFI vetting, tracking and delivery. Continue conducting onboard and off-board Electromagnetic Interference / Control (EMI / EMC) studies due to new the radar sensor. Continue analyzing / performing integrated topside design due to new radar sensor. Continue conducting power interface trade studies based upon radar prime power requirement and conduct trade studies to analyze platform power against transformer design and platform power against cost of ship modification. Continue conducting system integration studies related to the Test & Evaluation Master Plan (TEMP): platform impacts & updates to TEMP; cybersecurity analysis; Information Support Plan (ISP) updates supporting Net Ready KPP. Continue conducting Reliability, Maintainability & Availability (RMA) and integrated logistics support (ILS) Studies, to include trade studies and identification of investment opportunities / requirements. Continue preparing / updating acquisition support documents and cost estimates. Continue operation of the Integrated Product Team to include vendor, ship builder and Government. Participate in Preliminary Design Review. ***FY 2018 OCO Plans:*** N/A					
Title: CVN 78 Class Design for Affordability (DFA)	0.000	21.614	23.930	0.000	23.930
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3108 / *CVN 80 Total Ship Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** Conduct or support feasibility and tradeoff studies on new and modified shipboard systems and equipment. Studies shall include engineering analyses, including KPP impact assessments; identification of subsystem, integration, logistics, and testing impacts; material procurement; preliminary cost estimates for decision making purposes; development of potential contract change documentation; conducting / supporting ship checks; developmental testing; and report development and submission. Discover and assess CVN 78 Class DFA initiatives. Develop cost-saving initiatives, game changers, business case analyses, and DFA initiatives to continue to drive affordability into the carrier program. Perform CVN 80-specific engineering calculations and technical analysis in the areas of technical performance measures, system component calculations, environmental safety and health, and human factors engineering, survivability, and vulnerability, automation systems software, shock and vibration, and engineered components support. ***FY 2018 Base Plans:*** Continue conducting or supporting feasibility and tradeoff studies on new and modified shipboard systems and equipment. Continue to discover and assess CVN 78 Class DFA initiatives. Continue development of cost-saving initiatives, game changers, business case analyses, and DFA initiatives to continue to drive affordability into the carrier program. Continue performing CVN 80-specific engineering calculations and technical analysis in the areas of technical performance measures, system component calculations, environmental safety and health, and human factors engineering, survivability, and vulnerability, automation systems software, shock and vibration, and engineered components support. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.977	30.103	33.195	0.000	33.195

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN / 2001: *Carrier Replacement Program*	2,555.689	2,662.567	4,461.772	-	4,461.772	1,576.966	2,234.571	2,966.013	2,351.884	2,326.440	39,854.130
• SCN / 5300: *Completion of Prior Year Shipbuilding Programs*	123.760	0.000	20.000	-	20.000	0.000	95.308	0.000	0.000	0.000	1,490.068

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3108 / *CVN 80 Total Ship Integration*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTEN / 0604112N: *Project Units 2208, 4004*	95.408	70.528	83.935	-	83.935	84.195	57.668	27.503	28.009	Continuing	Continuing
• OMN / 1B2B: *CVN 78 Ford Class Training and Sustainment (12BJ0)*	25.534	14.111	14.099	-	14.099	9.422	8.398	6.580	7.165	Continuing	Continuing
• RDTEN / 0604501N: *Project Unit 3236 Advanced Radar Technology*	20.397	68.037	68.665	-	68.665	28.041	0.000	0.000	0.000	0.000	185.729
• OPN / 5664: *Surface Training Equipment*	0.000	4.733	12.010	-	12.010	8.039	1.006	5.034	3.024	0.000	33.846
• OMN / 1B1B: *Mission and Other Ship Operations (11B20)*	0.000	21.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	21.000

Remarks

D. Acquisition Strategy

The CVN 80 is the third ship of the CVN 78 Class of aircraft carriers designed to replace USS ENTERPRISE and the ships of the NIMITZ Class Carriers. The CVN 80 is a modified repeat of the CVN 78, which features a new nuclear propulsion and electrical generation / distribution system, electromagnetic aircraft launching system, advanced arresting gear system, electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the NIMITZ Class. Additionally, the following war-fighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability / flexibility, increased operational availability, and increased flexibility to support future upgrades.

CVN 80 will use late integration of Government-Furnished Equipment to provide the latest combat system and C4I suite applications within the planned system baseline. CVN 80 will improve upon processes used on CVN 78 to gain efficiencies during the CVN 80 Construction Preparation and Construction periods.

E. Performance Metrics

Successfully initiate the following tasks: 1) Development of risk impact statements, 2) Radar specification and traceability to test documents and 3) Development and maintenance of new CVN Warfare System architecture database.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3108 / *CVN 80 Total Ship Integration*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Design & Development	C/CPAF	HII : VA	0.000	0.300	May 2016	18.100	Nov 2016	17.044	Nov 2017	-		17.044	Continuing	Continuing	Continuing
Advanced Design & Development	C/CPAF	RAYTHEON : VA	0.000	0.000		3.910	Nov 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Advanced Design & Development	WR	NSWC DAHLGREN : VA	0.000	0.151	Jun 2016	2.536	Nov 2016	5.125	Nov 2017	-		5.125	Continuing	Continuing	Continuing
Advanced Design & Development	WR	NSWC CARDEROCK : MD	0.000	0.000		1.485	Nov 2016	2.750	Nov 2017	-		2.750	0.000	4.235	-
Advanced Design & Development	WR	NSWC PHILADELPHIA : PA	0.000	0.000		0.000		1.125	Nov 2017	-		1.125	0.000	1.125	-
Advanced Design & Development	C/CPFF	NAVSEA SEAPORT : DC	0.000	0.000		2.162	Nov 2016	3.000	Jan 2018	-		3.000	0.000	5.162	-
Advanced Design & Development	C/BA	NAWCAD PAX RIVER : MD	0.000	0.000		0.806	Nov 2016	0.500	Nov 2017	-		0.500	0.000	1.306	-
Advanced Design & Development	WR	NAWCAD LAKEHURST : NJ	0.000	0.313	Jul 2016	0.000		0.000		-		0.000	0.000	0.313	-
Advanced Design & Development	WR	SPAWAR : CA	0.000	0.190	Jun 2016	0.000		0.500	Nov 2017	-		0.500	0.000	0.690	-
Advanced Design & Development	Various	NSRP : VARIOUS	0.000	0.000		0.000		0.835	Dec 2017	-		0.835	0.000	0.835	-
Advanced Design & Development	Various	MISCELLANEOUS : VARIOUS	0.000	0.023	Jun 2016	1.104	Nov 2016	2.316	Nov 2017	-		2.316	0.000	3.443	-
		Subtotal	0.000	0.977		30.103		33.195		-		33.195	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.977		30.103		33.195		-		33.195	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3108 / *CVN 80 Total Ship Integration*

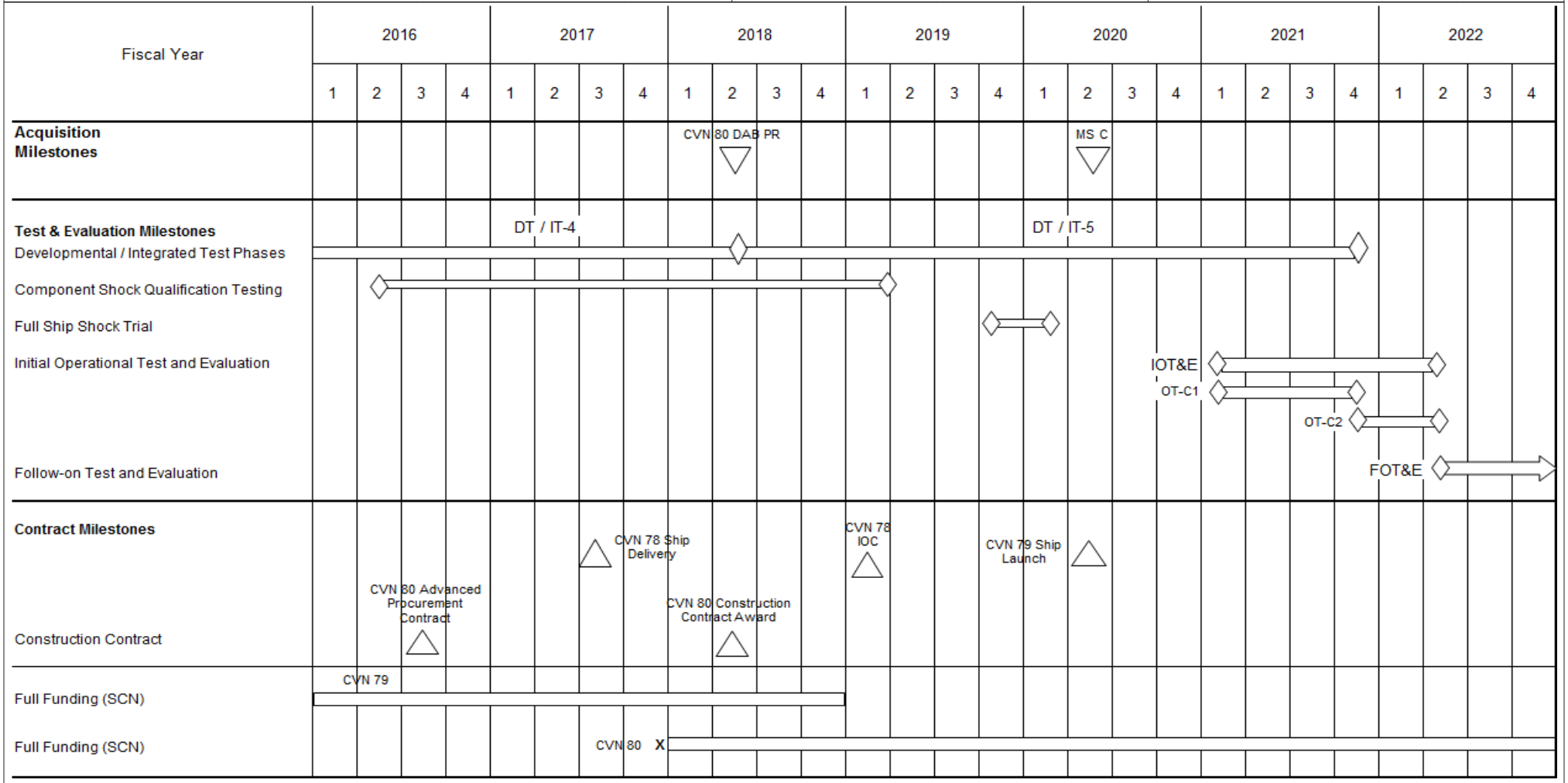

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3108 / *CVN 80 Total Ship Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3108				
CVN 80 DAB PR	2	2018	2	2018
Milestone C	2	2020	2	2020
DT/IT -4- Developmental Test / Integrated Test Phase 4	1	2016	2	2018
DT/IT -5- Developmental Test / Integrated Test Phase 5	2	2018	4	2021
Component Shock Qualification Testing	2	2016	1	2019
Full Ship Shock Trial	4	2019	1	2020
Initial Operational Test & Evaluation	1	2021	2	2022
OT-C1 - Initial Operational Test & Evaluation - Phase C1	1	2021	4	2021
OT-C2 - Initial Operational Test & Evaluation - Phase C2	4	2021	2	2022
FOT&E - Follow-On Test & Evaluation	2	2022	4	2022
CVN 78 Ship Delivery	3	2017	3	2017
CVN 78 Initial Operational Capability (IOC)	1	2019	1	2019
CVN 80 Advanced Procurement Contract Award	3	2016	3	2016
CVN 80 Construction Contract Award	2	2018	2	2018
CVN 79 SCN Full Funding	1	2016	4	2018
CVN 79 Ship Launch	2	2020	2	2020
CVN 80 SCN Full Funding	1	2018	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / *Ship Contract Design/ Live Fire T&E*	Project (Number/Name) 3179 / *CVN-79 Total Ship Integration*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3179: *CVN-79 Total Ship Integration*	172.286	13.035	17.081	16.953	-	16.953	14.894	15.207	15.509	15.806	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 223

A. Mission Description and Budget Item Justification

Development and related testing of CVN 78 Class aircraft carrier specific technologies, the infusion of the ship technology base into existing and future aircraft carriers, and the potential realization of subsystem design capabilities not currently feasible. This project also funds the Contract Design efforts for the CVN 79. This project transitions the minimum sustaining technologies required to address obsolescence, critical survivability shortfalls as identified in CVN 78 Class testing, future requirements, and technologies which did not mature in time to support the CVN 78. All systems developed in this project have the potential to support emerging requirements and other promising systems technologies for insertion into new aircraft carrier designs. The emphasis is directed toward developing ship hull, mechanical, propulsion, electrical, aviation, warfare systems, and combat support systems, sub-systems and components to maintain aircraft carrier affordability, manpower requirements, survivability, and operational capabilities and to meet the requirements of existing and pending regulations and statutes critical to the operation of future aircraft carriers. This project also encompasses those tasks required to develop the contract data package necessary to support CVN 79 procurement, including, but not limited to, engineering support, programmatic and program support, logistics support, modeling and simulation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment. In addition, this project focuses on significant procurement and life cycle cost reduction compared to the first ship of the class. Cost reductions are sought, developed and implemented in the areas of design, labor and material.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: CVN-79 Total Ship Integration	13.035	17.081	16.953	0.000	16.953
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued to develop cost reduction measures in support of CVN 79 and follow-on ship affordability. Assessed design and process changes to further address JP-5 CRES piping system integrity. Continued to integrate the unique maintenance, storage and handling requirements to deploy with the F-35C. Continued to address design, equipment, and system changes between CVN 78 and CVN 79 to identify candidate equipment and / or systems that might have required Follow-on Test and Evaluation (FOT&E). Continued to address design and construction issues based on the results of CVN 78 testing. Continued to manage fact-of-life and obsolescence changes on government-furnished equipment systems.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3179 / *CVN-79 Total Ship Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to address design, equipment and system changes between CVN 78 and CVN 79 to identify candidate equipment and / or systems that may require FOT&E. Continue to address design and construction issues based on the results of CVN 78 testing. Continue to manage fact-of-life and obsolescence changes on government furnished equipment systems. Initiate CVN 79 Phase II study to develop a strategy to efficiently transition from Phase I construction to Phase II and final delivery of CVN 79. ***FY 2018 Base Plans:*** Continue to address design, equipment and system changes between CVN 78 and CVN 79 to identify candidate equipment and/or systems that may require FOT&E. Continue to address design and construction issues based on the results of CVN 78 testing. Continue to manage fact-of-life, obsolescence changes on government furnished equipment systems, challenges encountered on CFE, and material analysis. Perform throughput analysis on Facility investments (Shop Lathe, Panel Line, Weather Covers, Outfitting Hall & Dry Dock)and Non-Touch Labor to solidify cost improvements. Continue CVN 79 Phase II study to develop a strategy to efficiently transition from Phase I construction to Phase II and final delivery of CVN 79. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	13.035	17.081	16.953	0.000	16.953

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN / 2001: *Carrier Replacement Program*	2,555.689	2,662.567	4,461.772	-	4,461.772	1,576.966	2,234.571	2,966.013	2,351.884	2,326.440	39,854.130
• SCN / 5300: *Completion of Prior Year Shipbuilding Programs*	123.760	0.000	20.000	-	20.000	0.000	0.000	0.000	0.000	0.000	1,394.860
• RDTEN / 0604112N: *Project Units 2208, 4004*	95.408	70.528	83.935	-	83.935	84.195	57.668	27.503	28.009	Continuing	Continuing
• OMN / 1B2B: *CVN 78 Ford Class Training and Sustainment (12BJ0)*	25.534	14.111	14.099	-	14.099	9.422	8.398	6.580	7.165	Continuing	Continuing
• OPN / 5664: *Surface Training Equipment*	0.000	4.733	12.010	-	12.010	8.039	1.006	5.034	3.024	0.000	33.846
• OMN / 1B1B: *Mission and Other Ship Operations (11B20)*	0.000	21.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	21.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3179 / *CVN-79 Total Ship Integration*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

The CVN 78 is the first ship of the CVN 78 Class of aircraft carriers designed to replace USS ENTERPRISE and the ships of the NIMITZ Class. The CVN 78 class will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system (EMALS), advanced arresting gear (AAG) system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the NIMITZ Class. Additionally, the following war fighting benefits will be realized: increased sortie generation rate, improved ship self-defense capability, increased launch and recovery capability / flexibility, increased operational availability, and increased flexibility to support future upgrades.

E. Performance Metrics

Successfully complete system development efforts for designated new and modified shipboard system, including developmental test and evaluation documents. Successfully complete design related activities associated with integration of new and modified shipboard systems into the ship, including developmental test and evaluation documentation. Successfully perform system design and analysis studies. Successfully support design integration and analysis. Successfully complete or support feasibility and tradeoff studies on new and modified shipboard systems, technologies, and proposed modifications. Studies shall include requirements and engineering analysis; identification of subsystem, integration, and logistics impacts; cost estimates; analysis of construction schedule impacts; and conduct / support of shipchecks. Successfully provide Manpower Workload Analysis associated with design and policy activities, and with integration of new and modified system/equipment. Successfully complete the development of multiple Business Case Analyses (BCAs) that demonstrate technology, process, requirements and / or infrastructure improvements that will reduce the man hours (or equivalent material costs) for CVN 79 Construction.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / *Ship Contract Design/ Live Fire T&E*	Project (Number/Name) 3179 / *CVN-79 Total Ship Integration*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Total Ship Integration	C/CPAF	HII : VA	86.689	4.736	Nov 2015	6.633	Nov 2016	7.480	Nov 2017	-		7.480	Continuing	Continuing	Continuing
Total Ship Integration	WR	NSWC CARDEROCK : MD	13.342	1.371	Oct 2015	0.200	Nov 2016	0.616	Nov 2017	-		0.616	Continuing	Continuing	Continuing
Total Ship Integration	WR	NSWC DAHLGREN : VA	10.666	1.541	Oct 2015	1.700	Oct 2016	2.273	Nov 2017	-		2.273	Continuing	Continuing	Continuing
Total Ship Integration	WR	NSWC PHILADELPHIA : PA	0.497	0.634	Oct 2015	0.000		0.625	Nov 2017	-		0.625	0.000	1.756	-
Total Ship Integration	WR	NAWCAD PAX RIVER : MD	5.037	0.490	Oct 2015	1.268	Oct 2016	0.750	Oct 2017	-		0.750	Continuing	Continuing	Continuing
Total Ship Integration	WR	SPAWAR : SD	4.165	0.326	Nov 2015	0.300	Nov 2016	0.295	Nov 2017	-		0.295	Continuing	Continuing	Continuing
Total Ship Integration	C/CPFF	NAVSEA SEAPORT : DC	23.059	0.973	Dec 2015	1.950	Dec 2016	2.159	Dec 2017	-		2.159	Continuing	Continuing	Continuing
Total Ship Integration	C/CPAF	RAYTHEON : MA	8.943	0.840	Jan 2016	1.815	Dec 2016	1.000	Dec 2017	-		1.000	Continuing	Continuing	Continuing
Total Ship Integration	WR	SSC CHARLESTON : SC	0.798	0.049	Apr 2016	0.000		0.000		-		0.000	0.000	0.847	-
Total Ship Integration	C/CPFF	SAIC : VA	1.445	0.000		0.000		0.000		-		0.000	0.000	1.445	-
Total Ship Integration	Various	NSRP : Various	12.256	1.670	Mar 2016	1.670	Dec 2016	0.835	Dec 2017	-		0.835	Continuing	Continuing	Continuing
		Subtotal	166.897	12.630		15.536		16.033		-		16.033	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC CARDEROCK : MD	4.721	0.000		0.000		0.000		-		0.000	0.000	4.721	-
Developmental Test & Evaluation	WR	NUWC NEWPORT : RI	0.123	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NSWC DAHLGREN : VA	0.188	0.388	Nov 2015	1.188	Nov 2016	0.569	Nov 2017	-		0.569	Continuing	Continuing	Continuing
Developmental Test & Evaluation	TBD	MISCELLANEOUS : TBD	0.000	0.017	Oct 2015	0.127	Nov 2016	0.125	Dec 2017	-		0.125	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3179 / *CVN-79 Total Ship Integration*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test & Evaluation	C/CPFF	FLC : VA	0.176	0.000		0.230	Dec 2016	0.226	Nov 2017	-		0.226	Continuing	Continuing	Continuing
		Subtotal	5.208	0.405		1.545		0.920		-		0.920	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense Acquisition Workforce	Various	Various : Misc	0.181	0.000		0.000		0.000		-		0.000	0.000	0.181	-
		Subtotal	0.181	0.000		0.000		0.000		-		0.000	0.000	0.181	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	172.286	13.035		17.081		16.953		-		16.953	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3179 / *CVN-79 Total Ship Integration*

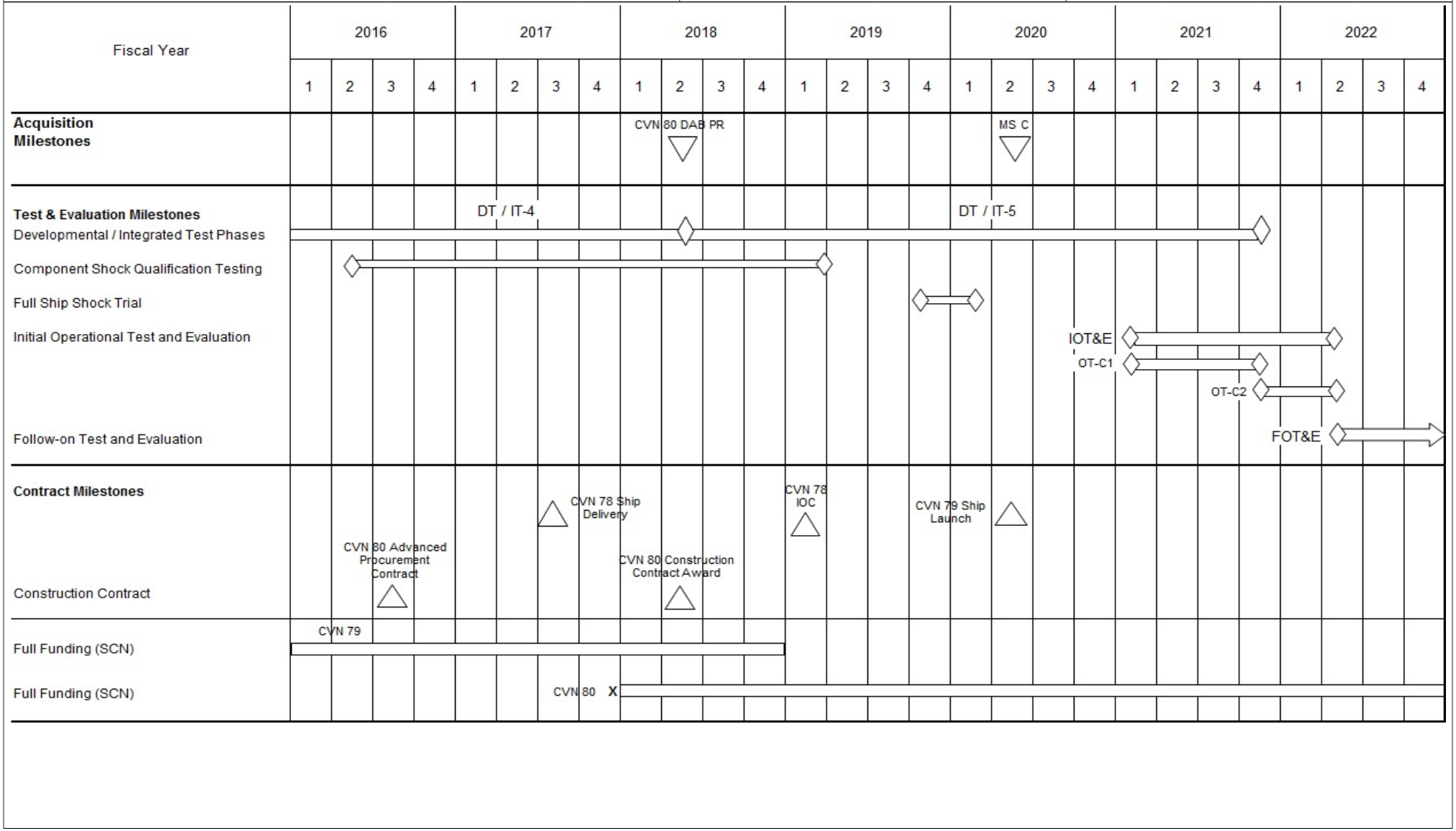

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3179 / *CVN-79 Total Ship Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3179				
CVN 80 DAB PR	2	2018	2	2018
Milestone C	2	2020	2	2020
DT/IT -4- Developmental Test / Integrated Test Phase 4	1	2016	2	2018
DT/IT -5- Developmental Test / Integrated Test Phase 5	2	2018	4	2021
Component Shock Qualification Testing	2	2016	1	2019
Full Ship Shock Trial	4	2019	1	2020
Initial Operational Test & Evaluation	1	2021	2	2022
OT-C1 - Initial Operational Test & Evaluation - Phase C1	1	2021	4	2021
OT-C2 - Initial Operational Test & Evaluation - Phase C2	4	2021	2	2022
FOT&E - Follow-On Test & Evaluation	2	2022	4	2022
CVN 78 Ship Delivery	3	2017	3	2017
CVN 78 Initial Operational Capability (IOC)	1	2019	1	2019
CVN 80 Advanced Procurement Contract Award	3	2016	3	2016
CVN 80 Construction Contract Award	2	2018	2	2018
CVN 79 SCN Full Funding	1	2016	4	2018
CVN 79 Ship Launch	2	2020	2	2020
CVN 80 SCN Full Funding	1	2018	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / *Ship Contract Design/ Live Fire T&E*	Project (Number/Name) 3369 / *Hybrid Electric Drive*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3369: *Hybrid Electric Drive*	7.814	3.717	0.000	0.986	-	0.986	0.518	0.266	0.000	0.000	0.000	13.301
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project includes the DON Energy Initiative related to the DDG 51 Hybrid Electric Drive to reduce DDG 51 Class ship energy consumption and increase mission effectiveness through longer time on station. This project supports propulsion at low ship speeds without the need for LM 2500 main engines. Fuel savings from the Hybrid Electric Drive system will be achieved by utilizing fewer gas turbines for propulsion and ship service power generation while also loading gas turbines generators at a more efficient operating load. Provides critical foundation for SECNAV and CNO objectives to achieve greater Navy-wide energy security.

Note: FY 2014 and prior year funding is resourced under project 1803 in this program element.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: DON Energy Initiative	3.717	0.000	0.986	0.000	0.986
Articles:	-	-	-	-	-
Description: This project is a DON Energy Initiative related to the DDG 51 Hybrid Electric Drive (HED) to reduce DDG 51 Class ship energy consumption and increase mission effectiveness through longer time on station. ***FY 2016 Accomplishments:*** Complete MCS software development. Complete Land Based Engineering Sites (LBES) Installation and Checkout of the pre-production unit. Commence initial LBES integration testing. Complete Integrated Logistics Support (ILS) certifications and ship design development. Develop and test additional MCS software baselines. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Develop and test additional MCS software baselines. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	3.717	0.000	0.986	0.000	0.986

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3369 / *Hybrid Electric Drive*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN 0140: *Hybrid Electric Drive (HED)*	29.106	15.132	6.331	-	6.331	5.867	0.016	0.017	0.018	46.585	115.710

Remarks

D. Acquisition Strategy

A full and open competition with a Fixed Price Incentive Fee Contract awarded for the development, qualification, and delivery of the Engineering Development Models (EDM) Hybrid Electric Drive (HED) and the initial HED production shipsets for the DDG 51 Fleet Modernization Program.

E. Performance Metrics

Completion of Engineering Development Model (EDM) and complete fielding of First Article (FA) including contract award, design, manufacturing, and delivery. Completion of Factory Acceptance Test (FAT) and performance testing in Land Based Engineering Site (LBES). Commencement, completion, delivery and installation of Low Rate Initial Production (LRIP) units. Achieve fuel efficiency and increase on-station time.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / *Ship Contract Design/ Live Fire T&E*	Project (Number/Name) 3374 / *MPF(F)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3374: *MPF(F)*	0.000	0.000	0.694	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.694
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 3374 - Maritime Prepositioning Force (Future) - MPF(F) - Concept studies, preliminary, contract designs and technology development and testing leading to detail design, and construction award of ship systems for the initial operational capability milestone achievement that will provide a highly flexible, operational and logistics support
capability to enable Expeditionary Maneuver Warfare concepts and to meet required operational capabilities with respect to Force Closure, Amphibious Task Force Integration, Sustainment and Reconstitution/Redeployment.

FY 2016 and prior year efforts were financed under the National Sealift Defense Fund (NDSF) BA 04, Project 3110 (Maritime Prepositioning Force (Future)). FY18 funds are reinstated under the National Sealift Defense Fund (NDSF) BA 04, Project 3110 (Maritime Prepositioning Force (Future))in the amount of $.468M

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Engineering and Acquisition Support	0.000	0.694	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: FY17 - Perform tracking execution of Test and Evaluation schedule to Test and Evaluation Master Plan (TEMP) - Complete Initial Operational Test and Evaluation (IOT&E) Phase 2 for Expeditionary Mobile Base (ESB) - Complete Total Ship Survivability Trial (TSST) and Final Survivability Assessment Report (FSAR) for Expeditionary Transfer Dock (ESD/ESB) Live Fire Test and Evaluation (LFT&E)					
FY 2018 Base Plans: FY18 - N/A					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.694	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 3374 / *MPF(F)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN/3039: *Afloat Forward Staging Base*	635.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,214.300

Remarks

D. Acquisition Strategy

To supplement the current maritime prepositioning force, and to provide in theater capability to support resupplying a Maritime Expeditionary Brigade, the Department is procuring 2 Expeditionary Transfer Dock (ESD, formerly MLP)in FY11, and three (one each in FY12, FY14 and FY16) Expeditionary Sea Base (ESB, formerly MLP AFSB Variant configurations).

E. Performance Metrics

Annual Program Review

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604567N / *Ship Contract Design/ Live Fire T&E*	Project (Number/Name) 4007 / *CVN 21 LFT&E*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
4007: *CVN 21 LFT&E*	61.683	4.139	3.736	3.983	-	3.983	4.121	4.227	4.368	4.465	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 223

A. Mission Description and Budget Item Justification

This project encompasses Live Fire Test and Evaluation (LFT&E) efforts for the CVN 78 Class. Title 10, US Code, Section 2366, CVN 21 Operational Requirements Document (ORD) and the CVN 78 Class Test and Evaluation Master Plan (TEMP) 1610 prescribe requirements for LFT&E. The purpose of LFT&E is to evaluate covered systems in a realistic combat environment before proceeding beyond low-rate initial production. Since the application of the survivability testing required by 10 USC 2366 to a CVN 78 Class ship would be unreasonably expensive and impractical, the Secretary of Defense waived the live fire testing requirement in 2004 and submitted a certification of that determination to Congress. The CVN 78 Class LFT&E Management Plan details the testing, modeling and simulation, and engineering analyses that are being used to determine whether CVN 78 Class ships will be able to survive and carry out their missions against the threat weapons identified in the Surface Ship Capstone System Threat Assessment Report (CSTAR) that are likely to be encountered in combat. The results of these tests and analyses are documented in periodic Vulnerability Assessment Reports (VARs).

The CVN 78 Class VAR 3 was completed in the summer of 2007 and the CVN 78 Class VAR 4 is scheduled to be completed in FY 17.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: CVN 21 LFT&E	4.139	3.736	3.983	0.000	3.983
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued using the enhanced CVN 78 full-ship structural Finite Element Model (FEM) to support the accomplishment of the Modeling & Simulation (M&S) Analytical Bridge studies of the CVN 78's response to Underwater Explosive (UNDEX) events. Continued planning for the CVN 78 Total Ship Survivability Trial (TSST), which included continuing to update the Damage Scenario Based Engineering Analyses (DSBEAs) selected as TSST scenarios and beginning the development of the TSST drill guides.					
FY 2017 Plans: Continue using the enhanced CVN 78 full-ship structural FEM to support the accomplishment of the M&S Analytical Bridge studies of the CVN 78's response to UNDEX events. Finalize DSBEAs utilized for TSST					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 4007 / *CVN 21 LFT&E*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Scenarios #3 and #4. Continue developing TSST procedures and implementation guides in support of an FY 18 TSST execution. Purchase majority of equipment that will be required for TSST in FY 18. ***FY 2018 Base Plans:*** Continue conducting UNDEX analyses on the CVN 78 full-ship structural FEM in support of the Analytical Bridge Study task. Begin development of the final Survivability Assessment Report. Continue planning for the CVN 78 TSST, which includes scenario development, cold checks on CVN 78 to update drill guides and implementation sheets, and development of the TSST Plan. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	4.139	3.736	3.983	0.000	3.983

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN / 2001: *Carrier Replacement Program*	2,431.929	2,662.567	4,503.772	-	4,503.772	1,526.214	2,241.530	2,966.013	2,351.884	Continuing	Continuing
• SCN / 5300: *Completion of Prior Year Shipbuilding Programs*	123.760	0.000	20.000	-	20.000	0.000	0.000	0.000	0.000	0.000	1,394.860
• RDTEN / 0604112N: *Project Units 2208, 4004*	95.408	70.528	83.935	-	83.935	84.195	57.668	27.503	28.009	Continuing	Continuing
• OMN / 1B2B: *CVN 78 Ford Class Training and Sustainment (12BJ0)*	25.534	14.111	14.099	-	14.099	9.422	8.398	6.580	7.165	Continuing	Continuing
• OPN / 5664: *Surface Training Equipment*	0.000	4.733	12.010	-	12.010	8.039	1.006	5.034	3.024	0.000	33.846
• OMN / 1B1B: *Mission and Other Ship Operations (11B20)*	0.000	21.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	21.000

Remarks

D. Acquisition Strategy

The CVN 78 is the first ship of the CVN 78 Class of aircraft carriers designed to replace USS ENTERPRISE and the ships of the NIMITZ Class. The CVN 78 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system (EMALS), advanced arresting gear (AAG) system,

all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the NIMITZ Class. Additionally, the following war fighting benefits will be realized: increased sortie generation rate, improved ship self-defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.

E. Performance Metrics

Complete: (1) the adjudication of final comments and updates to the CVN 78 Class LFT&E Management Plan, Revision B and route for signature; (2) the refinement of the CVN 78 structural FEM, in support of the Analytical Bridge analyses; and (3) the analyses and documentation for VAR 4 and route for signature.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 4007 / *CVN 21 LFT&E*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Live Fire Test & Evaluation	WR	NSWC Carderock : MD	52.529	2.928	Nov 2015	1.923	Nov 2016	3.153	Nov 2017	-		3.153	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	C/CPAF	HII : VA	8.938	1.131	Nov 2015	1.751	Nov 2016	0.750	Nov 2017	-		0.750	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	WR	NSWC Dahlgren : VA	0.206	0.080	Nov 2015	0.062	Nov 2016	0.080	Nov 2017	-		0.080	Continuing	Continuing	Continuing
		Subtotal	61.673	4.139		3.736		3.983		-		3.983	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense Acquisition Workforce	TBD	Various : Various	0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	-
		Subtotal	0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	-

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	61.683	4.139		3.736		3.983		-		3.983	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 4007 / *CVN 21 LFT&E*

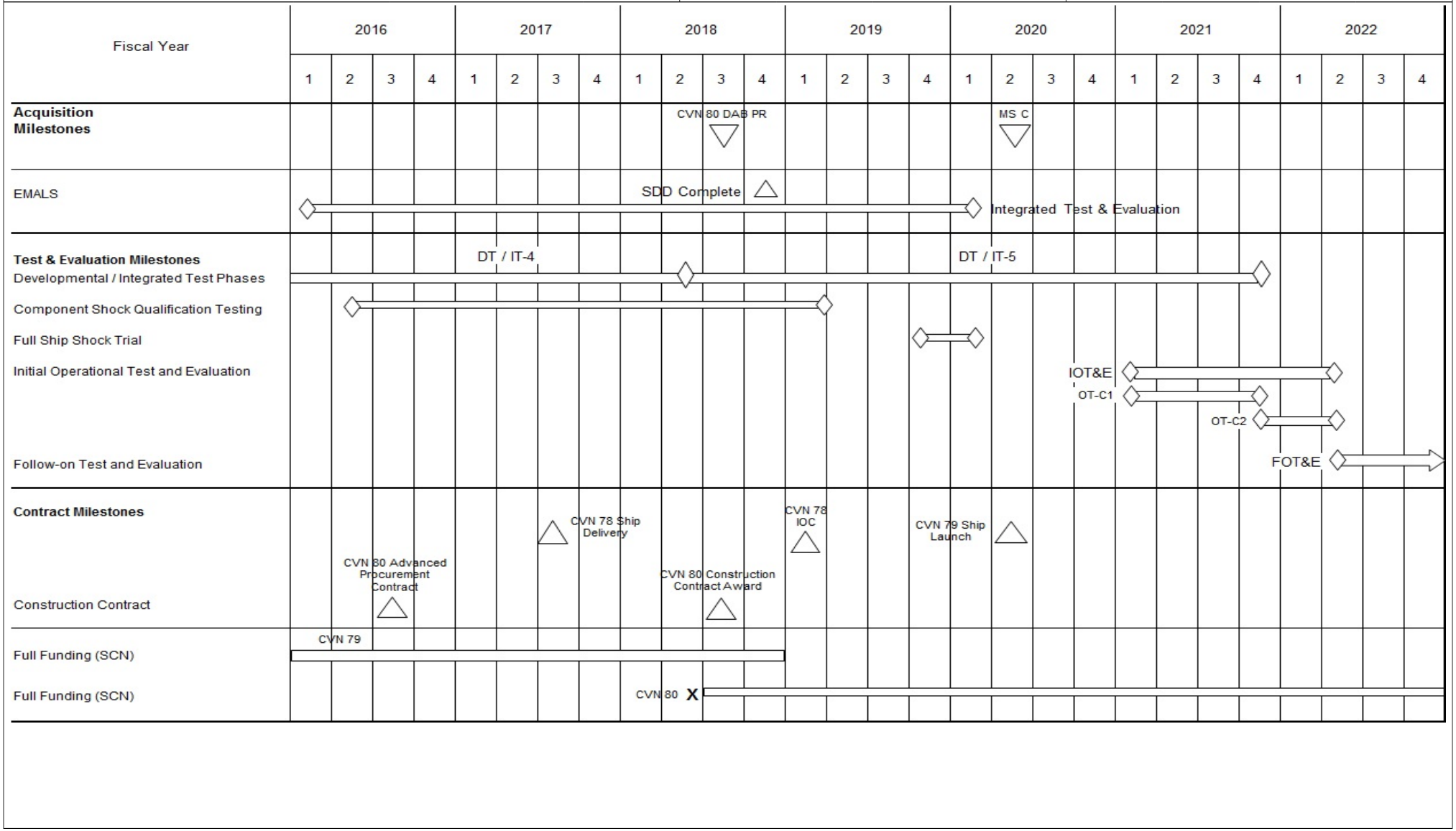

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604567N / *Ship Contract Design/ Live Fire T&E*	**Project (Number/Name)** 4007 / *CVN 21 LFT&E*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4007				
CVN 80 DAB PR	2	2018	2	2018
Milestone C	2	2020	2	2020
DT/IT -4- Developmental Test / Integrated Test Phase 4	1	2016	2	2018
DT/IT -5- Developmental Test / Integrated Test Phase 5	2	2018	4	2021
Component Shock Qualification Testing	2	2016	1	2019
Full Ship Shock Trial	4	2019	1	2020
Initial Operational Test & Evaluation	1	2021	2	2022
OT-C1 - Initial Operational Test & Evaluation - Phase C1	1	2021	4	2021
OT-C2 - Initial Operational Test & Evaluation - Phase C2	4	2021	2	2022
FOT&E - Follow-On Test & Evaluation	2	2022	4	2022
CVN 78 Ship Delivery	3	2017	3	2017
CVN 78 Initial Operational Capability (IOC)	1	2019	1	2019
CVN 80 Advanced Procurement Contract Award	3	2016	3	2016
CVN 80 Construction Contract Award	2	2018	2	2018
CVN 79 SCN Full Funding	1	2016	4	2018
CVN 79 Ship Launch	2	2020	2	2020
CVN 80 SCN Full Funding	1	2018	4	2022

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604574N *I Navy Tactical Computer Resources*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	3.884	4.053	3.098	4.817	-	4.817	4.727	4.097	4.062	4.144	Continuing	Continuing
3360: *Common Processing System (CPS)*	1.297	1.347	0.892	1.685	-	1.685	1.627	1.471	1.502	1.533	Continuing	Continuing
3361: *Common Display System (CDS)*	2.587	2.706	2.206	3.132	-	3.132	3.100	2.626	2.560	2.611	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Common Processing System (CPS) and Common Display System (CDS) programs support developing technology insertions in a competitively sourced environment. CPS & CDS provide technical replacements for obsolete display and processing equipment (such as AN/UYQ-70) for multiple warfare systems aboard Surface Combatants and Large Deck class ships.

CPS provides computer processing and memory, data storage and extraction, and Input/Output (I/O) interface to support hosting Navy combat system software applications and computing resources. These upgrades support AEGIS Modernization, AEGIS new construction, AEGIS Ashore, Ship Self Defense System (SSDS) MK2, Surface Electronic Warfare Improvement Program (SEWIP), and other Navy programs. Funding provides for technical management and Engineering Change Proposals (ECP) development for the common baseline. Procurement and development funds provided by user programs to support program unique requirements.

CDS provides operator display consoles with a common human machine interface to support the Combat System operations. These upgrades support AEGIS modernization, AEGIS new construction, AEGIS Ashore, DDG-1000, Ship Self Defense System (SSDS) MK 2, Gun Weapon System (GWS), and SEWIP. Funding provides for technical management and Engineering Change Proposals (ECP) development for the common baseline. Procurement and development funds provided by user programs to support program unique requirements.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	4.096	3.098	4.839	-	4.839
Current President's Budget	4.053	3.098	4.817	-	4.817
Total Adjustments	-0.043	0.000	-0.022	-	-0.022
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.043	0.000			
• Program Adjustments	0.000	0.000	-0.018	-	-0.018

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy				Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*		R-1 Program Element (Number/Name) PE 0604574N *I Navy Tactical Computer Resources*			
• Rate/Misc Adjustments	0.000	0.000	-0.004	-	-0.004

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604574N / *Navy Tactical Computer Resources*	Project (Number/Name) 3360 / *Common Processing System (CPS)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3360: *Common Processing System (CPS)*	1.297	1.347	0.892	1.685	-	1.685	1.627	1.471	1.502	1.533	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Common Processing System (CPS) program supports developing open architecture computer processing hardware and storage technology in a competitively sourced environment. CPS provides technical replacements for obsolete processing equipment (such as AN/UYQ-70) for multiple warfare systems aboard Surface Combatants and Large Deck class ships. CPS provides computer processing and memory, data storage and extraction, and Input/Output (I/O) interface to support hosting Navy combat system software applications and computing resources. These upgrades support AEGIS Modernization, AEGIS new construction, Ship Self Defense System (SSDS) MK2, Surface Electronic Warfare Improvement Program (SEWIP), and other Navy programs. Funding provides for technical management and Engineering Change Proposals (ECP) development for the common baseline. Procurement and development funds provided by user programs to support program unique requirements.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Common Processing System (CPS)	1.347	0.892	1.685	0.000	1.685
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Conducted system engineering support of CPS TI-16 development efforts required to support various Combat and Weapon System Configurations. Supported Engineering Analysis of issues identified within field configuration TI-12 to develop resolution plan to improve reliability, readiness, or reduce operating costs. Supported System Engineering efforts required to achieve Production Readiness Review (PRR) milestone.					
FY 2017 Plans: Continue system engineering support of CPS TI-16 development efforts required to support various Combat and Weapon System Configurations. Support Engineering Analysis of issues identified within field configuration TI-12 to develop resolution plan to improve reliability, readiness, or reduce operating costs. Support System Engineering efforts required to achieve In-Progress Review for TI-20 milestone.					
FY 2018 Base Plans: Continue system engineering support of CPS TI-12 / TI-16 development efforts required to support various Combat and Weapon System Configurations. Support Engineering Analysis of issues identified within field configuration TI-12 to develop resolution plan to improve reliability, readiness, or reduce operating costs.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604574N / *Navy Tactical Computer Resources*	**Project (Number/Name)** 3360 / *Common Processing System (CPS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Support System Engineering efforts required to achieve In-Progress Review for TI-20 milestone. FY18 increase is due to additional efforts required to support Technology Insertion (TI) MK 6 MOD 1 Equipment Suite CPS modifications to support the Critical Design Review (CDR), Test Readiness Review (TRR) and delivery of the initial Technical Data Package (TDP) all in FY18. MK 6 MOD 1 includes CPS Capability updates, DMS resolution and ACB-20 NCD derived requirement improvements. In addition, initial design work for TI MK 7 CPS will commence in FY18. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.347	0.892	1.685	0.000	1.685

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

CPS TI-16: Award build to Print Indefinite Delivery Indefinite Quantity (IDIQ) production contract for FY16-FY21.

E. Performance Metrics

Major Milestones:
CPS TI-12 Build-To-Print Contract Award (Procurement Order Available until second quarter FY17.
CPS TI-16 Preliminary Design Review first quarter FY16.
CPS TI-16 Critical Design Review second quarter FY16.
CPS TI-16 Test Readiness Review third quarter FY16.
CPS TI-16 Production Readiness Review fourth quarter FY16.
CPS TI-20 In Process Review No. 1 third quarter FY17.
CPS TI-20 In Process Review No. 2 first quarter FY18.
CDP TI-20 Preliminary Design Review third quarter FY18.
CPS TI-20 Production Readiness Review fourth quarter FY19.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604574N / *Navy Tactical Computer Resources*	Project (Number/Name) 3361 / *Common Display System (CDS)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3361: *Common Display System (CDS)*	2.587	2.706	2.206	3.132	-	3.132	3.100	2.626	2.560	2.611	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Common Display System (CDS) programs support developing technology insertions in a competitively sourced environment. CDS provide technical replacements for obsolete display and processing equipment (such as AN/UYQ-70) for multiple warfare systems aboard Surface Combatants and Large Deck class ships. CDS provides operator display consoles with a common human machine interface to support the Combat System operations. These upgrades support AEGIS modernization, AEGIS new construction, AEGIS Ashore, DDG-1000, Ship Self Defense System (SSDS) MK 2, Gun Weapon System (GWS), and SEWIP. Funding provides for technical management and Engineering Change Proposals (ECP) development for the common baseline. Procurement and development funds provided by user programs to support program unique requirements.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Common Display System (CDS)	2.706	2.206	3.132	0.000	3.132
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Conducted system engineering support of CDS TI-16 development efforts required to support various Combat and Weapon System Configurations. Supported Engineering Analysis of issues identified within field configuration TI-12 to develop resolution plan to improve reliability, readiness, or reduce operating costs. Supported System Engineering efforts required to achieve Production Readiness Review (PRR) milestone.					
FY 2017 Plans: Continue system engineering support of CDS TI-16 development efforts required to support various Combat and Weapon System Configurations. Support Engineering Analysis of issues identified within field configuration TI-12 to develop resolution plan to improve reliability, readiness, or reduce operating costs. Support System Engineering efforts required to achieve In-Progress Review for TI-20 milestone.					
FY 2018 Base Plans: Continue system engineering support of CDS TI-12 / TI-16 development efforts required to support various Combat and Weapon System Configurations. Support Engineering Analysis of issues identified within field configuration TI-12 to develop resolution plan to improve reliability, readiness, or reduce operating costs. Support System Engineering efforts required to achieve In-Progress Review for TI-20 milestone. FY18 increase					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604574N / *Navy Tactical Computer Resources*	**Project (Number/Name)** 3361 / *Common Display System (CDS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
is due to additional efforts required to support Technology Insertion (TI) MK 6 MOD 1 Equipment Suite CDS modifications to support the Critical Design Review (CDR), Test Readiness Review (TRR) and delivery of the initial Technical Data Package (TDP) all in FY18. MK 6 MOD 1 includes CDS Capability updates, DMS resolution and ACB-20 NCD derived requirement improvements. In addition, initial design work for TI MK 7 CDS will commence in FY18. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	2.706	2.206	3.132	0.000	3.132

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Contracts:
CDS TI-16: Award build to Print IDIQ production contract for FY16-FY21.

E. Performance Metrics

Major Milestones:
CDS TI-12 Build-To-Print Contract Award (Procurement Order Available until second quarter FY17.
CDS TI-16 Preliminary Design Review first quarter FY16.
CDS TI-16 Critical Design Review second quarter FY16.
CDS TI-16 Test Readiness Review third quarter FY16.
CDS TI-16 Production Readiness Review fourth quarter FY16.
CDS TI-20 In Process Review No. 1 third quarter FY17.
CDS TI-20 In Process Review No. 2 first quarter FY18.
CDS TI-20 Preliminary Design Review third quarter FY18.
CDS TI-20 Production Readiness Review fourth quarter FY19.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604580N *I (U)Virginia Payload Module (VPM)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	163.505	162.168	97.920	72.861	-	72.861	0.000	0.000	0.000	0.000	0.000	496.454
4500: *VIRGINIA Payload Module*	163.505	162.168	97.920	72.861	-	72.861	0.000	0.000	0.000	0.000	0.000	496.454
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 516												

Note

1. Detailed design funding for this project transitions to SCN (BLI: 2013) beginning in FY17 to support VPM production beginning in FY19.

A. Mission Description and Budget Item Justification

The U.S. Navy must maintain a submarine fleet that is of sufficient capability and numbers to defend American interests. The VIRGINIA Class Submarine, formerly the New Attack Submarine (New SSN), is designed to fulfill this need. It will counter the potential threats of the next century in a multi- mission capable submarine that has the ability to provide covert, sustained combat presence in denied waters. The primary goal of the program is to develop an affordable yet capable submarine by evaluating a broad range of system and technology alternatives, and pursuing cost reduction, producibility improvement, and technical risk management. This Program Element (PE) provides the technology, prototype components, and systems engineering needed to design and construct the VIRGINIA Payload Module (VPM). VPM mitigates and will recapitalize the conventional TOMAHAWK Land Attack Missile (TLAM) gap created by the retirement of SSGNs in the late 2020s while maintaining current platform requirements. This PE directly supports the following VIRGINIA Class Submarine missions: (1) covert strike warfare; (2) anti-submarine warfare; (3) covert intelligence collection/surveillance, indication and warning, and electronic warfare; (4) anti-surface ship warfare; (5) special warfare; (6) mine warfare; and (7) battle group support.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	167.719	97.920	72.165	-	72.165
Current President's Budget	162.168	97.920	72.861	-	72.861
Total Adjustments	-5.551	0.000	0.696	-	0.696
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-5.551	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.696	-	0.696

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604580N / *(U)Virginia Payload Module (VPM)*	Project (Number/Name) 4500 / *VIRGINIA Payload Module*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
4500: *VIRGINIA Payload Module*	163.505	162.168	97.920	72.861	-	72.861	0.000	0.000	0.000	0.000	0.000	496.454
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 516

A. Mission Description and Budget Item Justification

This project encompasses Navy RDT&E efforts required to incorporate a modular design for future VIRGINIA Class Submarines (VCS) which integrates additional strike payload capacity for Tomahawk Land Attack and follow on missiles. The design is targeted for VCS Block V (FY19-23 ships).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Non-Propulsion Electronics System (NPES) Engineering	24.366	15.123	12.700	0.000	12.700
Articles:	-	-	-	-	-

FY 2016 Accomplishments:

Continued development of VPM system launch control and integration with existing VIRGINIA Class combat systems. Integrated and automated launch processes to enable efficient launch of payloads. Assessed launcher electronics and software design to support rapid, low cost integration and testing of payloads. Reduced overall launch electronics weight and footprint, and provided increased unit space for future payload electronics. Products include specifications, systems diagrams, arrangements, implementation of Advanced Message Queuing Protocol (AMQP) to VPM network (Common Object Request Broker Architecture (CORBA) technology replacement), next generation TOMAHAWK (replaces TLAM BLK IV), implementation of new TOMAHAWK Control System (PMA280 software), implementation of TTWCS 5.6 supporting TOMAHAWK cell tasking vice tube tasking. Electric Boat (EB) will be assembling Functional Qualification Testing (FQT) and Software Qualification Testing (SQT) for Engineering Development Model (EDM). Software Readiness Review and Preliminary Design Review (TI16/APB15) completed to support EDM SQT. All EDM components have been ordered, all EDMs will be delivered by the end of CY2017. All Program Acquisition Resource Managers (PARM) (NUWC NPT, PMA280, 281, PMS425, and EB) will be conducting software prototype drops with fleet operators quarterly through FY16 and 17, in addition to an OPEX (operational exercise of the prototype) being completed every six months.

FY 2017 Plans:

Complete Critical Design Review for TI16/APB15 VPM SQT baseline to support continued development of VPM system launch control and integration with existing VIRGINIA Class combat systems. Integrate and automate launch processes to enable efficient launch of payloads. Assess launcher electronics and software

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604580N / *(U)Virginia Payload Module (VPM)*	**Project (Number/Name)** 4500 / *VIRGINIA Payload Module*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
design to support rapid, low cost integration and testing of payloads. Assemble and deliver all EDM units (April - December 2017), complete FQT and SQT at delivery. Complete initial VPM Common Weapon Launcher (CWL) FQT, VPM Network Input/Output Unit (NIOU) FQT, and Payload Tube Control Panel (PTCP) FQT. Complete integrated VPM weapon launch sysem SQT. Submit VPM CWL Shock and EQT Test Plan for NAVSEA approval to support FY18 test efforts. Complete Formal Weapon System Test Plans and Test Procedures to support FY18 test efforts. Products include specifications and systems diagrams. Continue with implementation of AMQP to VPM network (CORBA technology replacement), next generation TOMAHAWK (replaces TLAM BLK IV), implementation of new TOMAHAWK Control System (PMA280 software), implementation of TTWCS 5.6 supporting TOMAHAWK cell tasking vice tube tasking. All PARMS (NUWC NPT, PMA280, 281, PMS425, and EB) will be conducting software prototype drops (TTWCS Decision Aid, Multi-tube cell preparations/automation, automation of weapon casualties, Electronic OD44979 procedures, TTWCS Touch and Go Displays) with fleet operators quarterly through FY17 and FY18, in addition to an OPEX (operational exercise of the prototype) being completed every six months. ***FY 2018 Base Plans:*** Formal Environmental Qualification Test (EQT) of the new Common Weapons Launcher (CWL) electronics and support structure will take place, including full shock test. TOMAHAWK missile electrical characteristic and interface requirements verification testing will commence, necessary to validate accurate power and navigation data inputs. Combat system interface and fail-over modes will be tested to confirm proper SWFTS interoperability. And various fleet operator concept of operations demonstrations will take place to support development of operator training and maintenance procedures. ***FY 2018 OCO Plans:*** N/A					
Title: Hull, Mechanical, and Electrical (HM&E) Systems Engineering	137.802	82.797	60.161	0.000	60.161
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued design efforts for the VPM including integration to existing hull structure, hydrodynamic assessments, hydraulic system design, tube control interface, and internal arrangements to accommodate hardware, electronics and personnel. Project executed VPM Integrated Master Schedule (IMS) and Manufacturing Plans, and designed the casting and forging prototype patterns for the Integrated Tube and Hull (ITH), and prototype forging pattern for the Integrated Tube and Keel (ITK) designs. Poured ITH Castings and began their destructive testing. Developed final ITH and ITK casting and forging patterns, and started payload tube proto-tactical					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604580N / *(U)Virginia Payload Module (VPM)*	**Project (Number/Name)** 4500 / *VIRGINIA Payload Module*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
construction. Began prototypical production of increased capacity air condition plant. Completed all VPM ship specifications and system description documents, and began the development of plug design arrangements and host ship arrangements. Type of products completed included specifications, requested diagram changes (RDC), system diagrams, arrangements, system description documents, design disclosures long lead time components and payload tube prototype. ***FY 2017 Plans:*** Continue design efforts for the VPM including integration to existing hull structure, hydrodynamic assessments, hydraulic system design, tube control interface, and internal arrangements to accommodate hardware, electronics and personnel. Forge the first tactical ITH and ITK through completion and cast first tactical ITH and begin machining. Continue production of prototypical increased capacity air conditioning plant. Continue executing VPM Integrated Master Schedule (IMS) and Manufacturing Plans. Continue payload tube proto-tactical construction. Complete system diagrams and continue development of technical products including design disclosures, requested diagram changes, and plug design arrangements and base ship arrangements. Continue design disclosures, RDCs, arrangements, long lead time components and payload tube prototype. ***FY 2018 Base Plans:*** Continue design efforts for the VPM including integration to existing hull structure, hydrodynamic assessments, hydraulic system design, tube control interface, and internal arrangements to accommodate hardware, electronics and personnel. Continue executing Integrated Master Schedule (IMS) and Manufacturing Plans. Continue payload tube proto-tactical construction and receipt of ITHs and ITKs. Complete prototypical larger capacity Air Conditioning plant and qualify plant for capacity and noise; begin production of first prototype unit Air Conditioning plant. Complete payload tube prototype. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	162.168	97.920	72.861	0.000	72.861

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN/2013: *VIRGINIA Class Submarine*	5,318.210	4,955.219	5,225.911	-	5,225.911	7,181.369	7,209.343	6,534.775	5,263.896	48,161.837	150,856.478

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604580N / *(U)Virginia Payload Module (VPM)*	**Project (Number/Name)** 4500 / *VIRGINIA Payload Module*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/0942: *Virginia Class Support Equipment*	35.747	66.838	46.610	-	46.610	68.388	29.751	24.422	24.103	Continuing	Continuing
• OMN/1B2B: *Ship Operational Support and Training*	5,318.210	4,955.219	5,225.911	-	5,225.911	7,181.369	7,209.343	6,534.775	5,263.896	0.000	102,694.641
• RDT&E/0604558N/1947: *New Design SSN HM&E*	76.040	83.586	82.506	-	82.506	58.059	43.711	48.906	49.793	Continuing	Continuing
• RDT&E/0604558N/1950: *New Design SSN Combat Sys Dev*	30.667	26.977	34.913	-	34.913	39.342	36.348	37.088	37.823	Continuing	Continuing

Remarks

D. Acquisition Strategy

The VIRGINIA Class Submarine Program has implemented Integrated Product and Process Development (IPPD). The traditional distinct phasing of the design process has been replaced with the continuous concurrent engineering IPPD process. The IPPD approach has facilitated a smoother transition from design to manufacturing and has reduced the number of changes typically encountered during construction of the lead and early follow-on ships. In September 1997, Congress passed a law allowing Electric Boat (EB) and Northrop Grumman Newport News (NGNN), now Huntington Ingalls Industries (HII), to team for production of the first four VIRGINIA Class Submarines. Under the teaming agreement, EB remained the design yard for the VIRGINIA Class Submarine and HII became a part of the IPPD process. The Program Office is managing two Multi-Year Procurement (MYP) contracts. The first is for the Block III (FY09-13) ships. The second is for the Block IV (FY14-18) ships awarded April 2014. All Block I & II ships (SSNs 774-783) have been delivered. The first two Block III ships, SSN 784 and SSN 785, delivered in August 2014 and June 2015 respectively, with the remaining six ships awarded and under construction. The first six Block IV ships are awarded and under construction, with the remaining four to be authorized and appropriated in FY 2017 and FY 2018. Developmental efforts began in FY13 and will be executed via current Lead Design Yard Agent contract with Electric Boat. The program is currently planning for the fourth MYP (Block V) contract that will reflect 10 SSNs (FY19-23) and is anticipated to award in Early FY 2019.

E. Performance Metrics

Preliminary Design Review
Critical Design Review

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604580N / *(U)Virginia Payload Module (VPM)*	Project (Number/Name) 4500 / *VIRGINIA Payload Module*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Component Development	WR	NSWC : Carderock, MD	22.892	15.674	Nov 2015	11.200	Nov 2016	2.246	Nov 2017	-		2.246	15.815	67.827	-
Component Development	WR	NUWC : Newport, RI	14.634	7.647	Nov 2015	7.500	Nov 2016	1.853	Nov 2017	-		1.853	20.538	52.172	-
Component Development	C/CPFF	Electric Boat : Groton, CT	118.479	131.597	Nov 2015	70.720	Nov 2016	63.094	Nov 2017	-		63.094	132.370	516.260	-
Component Development	C/CPFF	GD-AIS : Pittsfield, MA	7.000	7.000	Nov 2015	5.600	Jan 2017	4.975	Jan 2018	-		4.975	0.000	24.575	-
Component Development	WR	PMA 280/281 : Pax River, MD	0.000	0.000		2.700	Jan 2017	0.000	Jan 2018	-		0.000	0.000	2.700	-
Component Development	SS/CPFF	ARL/PSU : UNIVERSITY PARK, PA	0.000	0.000		0.200	Jan 2017	0.000	Jan 2018	-		0.000	0.000	0.200	-
Component Development	WR	NSWC : Philadelphia, PA	0.000	0.000		0.000		0.287	Nov 2017	-		0.287	0.000	0.287	-
Component Development	C/CPFF	Raytheon : Tuscon, AZ	0.000	0.000		0.000		0.406	Jan 2018	-		0.406	0.000	0.406	-
		Subtotal	163.005	161.918		97.920		72.861		-		72.861	168.723	664.427	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	C/CPAF	SEAPORT : Rockville, MD	0.500	0.250	Nov 2015	0.000		0.000		-		0.000	0.500	1.250	-
		Subtotal	0.500	0.250		0.000		0.000		-		0.000	0.500	1.250	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	163.505	162.168		97.920		72.861		-		72.861	169.223	665.677	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604580N / *(U)Virginia Payload Module (VPM)*	**Project (Number/Name)** 4500 / *VIRGINIA Payload Module*

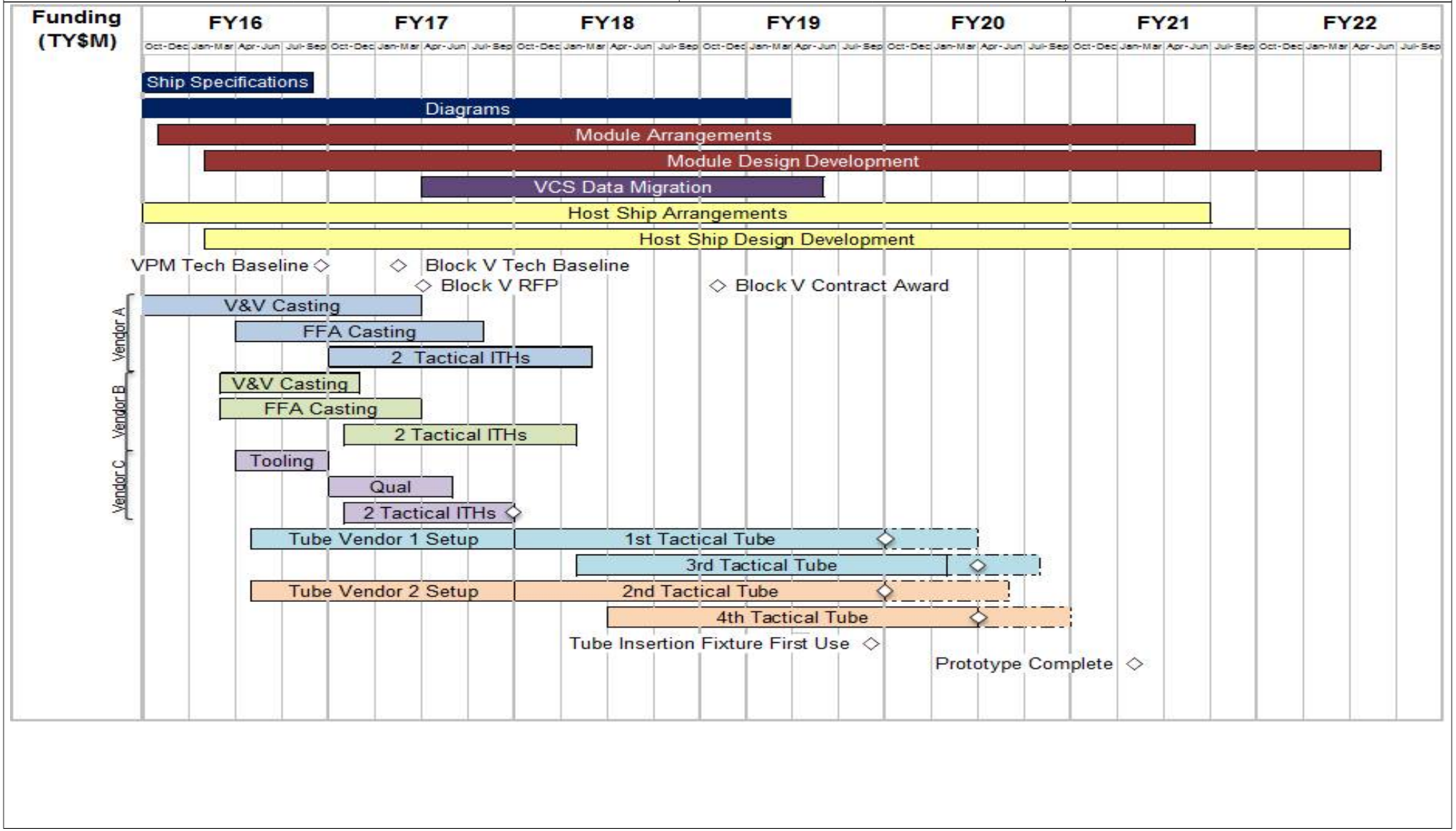

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604580N / *(U)Virginia Payload Module (VPM)*	**Project (Number/Name)** 4500 / *VIRGINIA Payload Module*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4500				
Ship Specifications	1	2016	4	2016
Diagrams	1	2016	2	2019
Module Arrangements	1	2016	3	2021
Module Design Development	2	2016	3	2022
VCS Data Migration	3	2017	3	2019
Host Ship Arrangements	1	2016	3	2021
Host Ship Design Development	2	2016	2	2022
VPM Tech Baseline	4	2016	4	2016
Block V Tech Baseline	2	2017	2	2017
Block V RFP	3	2017	3	2017
Block V Contract Award	1	2019	1	2019
Vendor A V&V Casting	1	2016	2	2017
Vendor A FFA Casting	3	2016	4	2017
Vendor A Two Tactical ITHs	1	2017	2	2018
Vendor B V&V Casting	2	2016	1	2017
Vendor B FFA Casting	2	2016	2	2017
Vendor B Two Tactical ITHs	1	2017	2	2018
Vendor C Tooling	3	2016	4	2022
Vendor C Qual	1	2017	3	2017
Tube Vendor 1 Setup	3	2016	4	2017
Vendor 1 First Tactical Tube	1	2018	2	2020

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604580N / *(U)Virginia Payload Module (VPM)*	**Project (Number/Name)** 4500 / *VIRGINIA Payload Module*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Vendor 1 Third Tactical Tube	2	2018	4	2020
Tube Vendor 2 Setup	3	2016	4	2017
Vendor 2 Second Tactical Tube	1	2018	3	2020
Vendor 2 Fourth Tactical Tube	3	2018	4	2020
Tube Insertion Fixture First Use	4	2019	4	2019
Prototype Complete	2	2021	2	2021

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604601N *I Mine Development*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	258.470	12.602	15.290	25.635	-	25.635	18.495	15.705	16.362	20.023	Continuing	Continuing
0267: *Mine Improvements*	222.268	12.602	15.290	17.617	-	17.617	11.013	8.729	13.885	9.046	Continuing	Continuing
2993: *Encapsulated Effector*	36.202	0.000	0.000	8.018	-	8.018	7.482	6.976	2.477	10.977	Continuing	Continuing

A. Mission Description and Budget Item Justification

Mine development R&D supports the capability to maintain the effectiveness of mines facing new threat targets and increasing emphasis on major regional conflicts and littoral warfare in shallow water. Project tasks are grouped into several areas: (1) Threat Modeling/Analysis, which collects, analyzes, and develops digital models of data on current priority threat target characteristics to support computer simulations; (2) Target Detection and Response, which uses target models to develop optimal mine designs, settings, and firing algorithms;(3) Developing and upgrading Tactical Decision Aids (TDAs) to assist the warfighter in planning and placing more effective minefields; (4) Test and Evaluation (T&E) to support aircraft certification; (5) Design, develop and test the Clandestine Delivered Mine (CDM) capability; a conversion kit to convert legacy mine warheads into Unmanned Underwater Vehicle (UUV) delivered mines.

Beginning in FY16, integration of the second increment with the TDD Mk 71 and the addition of a remote command and control capability will provide improved performance and efficiencies of the system. Additional funds in FY17 will support the Joint Operational Need Statement (JEONS) to improve aerial delivery by converting a Joint Direct Attack Munition (JDAM) equipped bomb into a Quickstrike JDAM mine. Development of a new mining capability, to encapsulate a wide area of coverage weapon, such as a torpedo, to achieve mine warfare operational objectives will begin in FY18. The Encapsulated Effector program will be the transition path for multiple ongoing science and technology projects to allow for off-board sensing of targets, remote control of mines, and reduced number of warheads needed to achieve the intended effect.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	15.122	10.490	17.640	-	17.640
Current President's Budget	12.602	15.290	25.635	-	25.635
Total Adjustments	-2.520	4.800	7.995	-	7.995
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.050	0.000			
• SBIR/STTR Transfer	-0.470	0.000			
• Program Adjustments	0.000	4.800	2.728	-	2.728
• Rate/Misc Adjustments	0.000	0.000	5.267	-	5.267

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604601N *I Mine Development*

Change Summary Explanation

Total Adjustments: FY16 -$2,050k BTR to ONR, for mine rails and -$470k SBIR
Total Adjustments: FY17 +$4,800k FY17 RAA in support of Quickstrike JEONS
Total Adjustments: FY18 +$2,728k Encapsulated Effector, -$23k Misc adjustment

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604601N / *Mine Development*	Project (Number/Name) 0267 / *Mine Improvements*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0267: *Mine Improvements*	222.268	12.602	15.290	17.617	-	17.617	11.013	8.729	13.885	9.046	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mine development R&D supports the capability to maintain the effectiveness of mines facing new threat targets and increasing emphasis on major regional conflicts and littoral warfare in shallow water. Project tasks are grouped into several areas: (1) Threat Modeling/Analysis, which collects, analyzes, and develops digital models of data on current priority threat target characteristics to support computer simulations; (2) Target Detection and Response, which uses target models to develop optimal mine designs, settings, and firing algorithms;(3) Developing and upgrading Tactical Decision Aids (TDAs) to assist the warfighter in planning and placing more effective minefields; (4) Test and Evaluation (T&E) to support aircraft certification; (5) Design, develop and test the Clandestine Delivered Mine (CDM) capability; a conversion kit to convert legacy mine warheads into Unmanned Underwater Vehicle (UUV) delivered mines.

Beginning in FY16, integration of the second increment with the TDD Mk 71 and the addition of a remote command and control capability will provide improved performance and efficiencies of the system. Additional funds in FY17 will support the Joint Operational Need Statement (JEONS) to improve aerial delivery by converting a Joint Direct Attack Munition (JDAM) equipped bomb into a Quickstrike JDAM mine.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development	9.826	11.105	11.984	0.000	11.984
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Software Development: Modified algorithms based on testing results. Continued generating OPDATA for the Fast Patrol Boat, Air Cushioned Vehicle, and large ship algorithms. Completed detailed design of a Clandestine Delivered Mine (CDM) that uses existing Submarine Launched Mobile Mine (SLMM) components and legacy TDD Mk 57 to allow for delivery of mines by UUV. Design includes modifications to fuze components, batteries, weapon casing, and mine rails which attach the mines to the UUV. Initial prototyping and testing was conducted successfully. Began development of remote command and control capability for CDM and integration of the programmable TDD Mk 71.					
FY 2017 Plans: Support JEONS capability development by generating damage effects data for 2000 pound version of Quickstrike compatible with JDAM tail kits, performing system safety analysis to support a Joint Services Weapon Safety Review, and developing upgrades to minefield planning software to add this capability into the next software build. Modify algorithms based on testing results. Continue generating OPDATA for the Fast Patrol Boat, Air Cushioned Vehicle, and large ship algorithms based on updated fleet priorities. Deliver					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604601N / *Mine Development*	**Project (Number/Name)** 0267 / *Mine Improvements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
to the fleet new algorithms for the TDD Mk 71 for Fast Patrol Boat. Support and assess results of end-to-end testing of CDM phase 1 during an in-water event that demonstrates weapon build-up, loading, transit, delivery, arming sequence, target detection, and simulated fire. Obtain Weapon System Explosive Safety Review Board (WSESRB) concurrence for CDM phase 1. Continue development and integration of remote control hardware and TDD Mk 71 in CDM upgrades. ***FY 2018 Base Plans:*** Continue development of 2000 pound Quickstrike to support JEONS requirements. Tasks include generating damage effects data against a range of targets, performing system safety analysis, and finishing upgrades to minefield planning software to add this capability into the next software build.Deliver large ship target detection algorithm to the fleet for use within the TDD Mk 71. Continue development of CDM phase 2, including finalizing interface design, by integrating the programmable TDD Mk 71 and a remote command and control capability. ***FY 2018 OCO Plans:*** N/A					
Title: Support ***Articles:***	0.050 -	0.060 -	0.085 -	0.000 -	0.085 -
FY 2016 Accomplishments: Provided Information Assurance (IA) and technical support of Mine Warfare development lab for Quickstrike Mines. ***FY 2017 Plans:*** Provide Information Assurance (IA) and technical support of Mine Warfare development lab for Quickstrike Mines. Begin cyber security analysis and documentation in support of the remote control of the Clandestine Delivered Mine. ***FY 2018 Base Plans:*** Continue to provide Information Assurance (IA) and technical support of Mine Warfare development lab for Quickstrike Mines. Continue cyber security analysis and documentation in support of the remote control of the Clandestine Delivered Mine. Initiate cyber security analysis during conceptual design phase of Encapsulated Effector program. ***FY 2018 OCO Plans:*** N/A					
Title: Management:	0.050	0.060	0.080	0.000	0.080

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604601N / *Mine Development*	**Project (Number/Name)** 0267 / *Mine Improvements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Program Management Support, contract support and Travel ***FY 2017 Plans:*** Program Management Support, contract support and Travel ***FY 2018 Base Plans:*** Program Management Support, contract support and Travel ***FY 2018 OCO Plans:*** N/A					
Title: Test and Evaluation	2.676	4.065	5.468	0.000	5.468
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued aircraft certification (to include F/A-18). Conducted in-water testing for planned algorithms for TDD Mk 71. Conducted subsystem level testing on CDM in preparation for an end-to-end demonstration in FY17. Conducted laboratory integration testing and an in-water test of CDM to evaluate interfaces with delivery vehicle, proper deployment and safe arming sequence. Successfully conducted proof-of-concept, in-water demonstration of remote control of a minefield. ***FY 2017 Plans:*** In order to support JEONS for maritime mining, perform water impact testing of a Quickstrike JDAM configuration. Conduct aircraft integration testing and analysis of Quickstrike JDAM on US Air Force bomber platforms. Complete aircraft certification of F/A-18. Conduct explosive ordnance disposal (EOD) render safe procedures testing to ensure safe disposal procedures are safe and effective for EOD forces. Conduct end-to-end testing of CDM phase 1 during an in-water event that demonstrates weapon build-up, loading, transit, delivery, arming sequence, target detection, and simulated fire. Complete safety qualification testing of fuze and battery components of CDM. ***FY 2018 Base Plans:*** In support of JEONS for maritime mining, complete water impact testing of a Quickstrike JDAM configuration. Continue aircraft integration testing and analysis of Quickstrike JDAM on US Air Force bomber platforms.Complete aircraft certification of B-52. Conduct explosive ordnance disposal (EOD) render safe procedures testing to ensure safe disposal procedures are safe and effective for EOD forces, based on updated					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604601N / *Mine Development*	**Project (Number/Name)** 0267 / *Mine Improvements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
target algorithms. Conduct system-level integration testing of CDM phase 2 using engineering design models to ensure TDD Mk 71 and remote control devices function as designed. Initiate safety qualification testing of updated fuze and battery components of CDM Phase 2. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	12.602	15.290	17.617	0.000	17.617

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• WPN 3231: *Quickstrike Mine*	10.754	1.236	10.276	-	10.276	7.294	5.210	5.320	5.426	0.000	96.409

Remarks

D. Acquisition Strategy

Procurement of Target Detecting Device (TDD) Mk 71, MK 62/63 kits, MK 65, Clandestine Delivered Mine (CDM) kits and associated components.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604601N / *Mine Development*	Project (Number/Name) 0267 / *Mine Improvements*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NSWC PC : Panama City, FL	117.357	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Ancillary Hardware Development	C/CPAF	Various : Various	4.012	0.050	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Ship Suitability	WR	NSWC PC : Panama City, FL	2.467	0.000		0.000		0.000		-		0.000	0.000	2.467	-
GFE	C/CPAF	Various : Various	4.790	0.000		0.000		0.000		-		0.000	0.000	4.790	-
Software Development	WR	NSWC, PC : Panama City, FL	20.015	1.200	Nov 2015	1.570	Oct 2016	2.050	Oct 2017	-		2.050	0.000	24.835	-
Clandestine Mine	WR	NSWC, PC : Panama City, FL	1.940	2.578	Nov 2015	2.282	Oct 2016	3.233	Oct 2017	-		3.233	0.000	10.033	-
Clandestine Mine	WR	NSWC, IH : Indian Head, MD	2.050	2.938	Nov 2015	2.767	Nov 2016	4.533	Nov 2017	-		4.533	0.000	12.288	-
Clandestine Mine	C/CPFF	JHU/APL : Baltimore, MD	2.730	3.060	Nov 2015	1.211	Dec 2016	2.168	Dec 2017	-		2.168	0.000	9.169	-
Mk 84 minefield planning	WR	NSWC PC : Panama City, FL	0.000	0.000		1.628	May 2017	0.000		-		0.000	0.000	1.628	-
Mk84 damage & system analysis	WR	NSWC IH : Indian Head, Md	0.000	0.000		1.647	May 2017	0.000		-		0.000	0.000	1.647	-
		Subtotal	155.361	9.826		11.105		11.984		-		11.984	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
IA/ILS/Technical	WR	NSWC PC : Panama City, FL	0.822	0.050	Nov 2015	0.060	Oct 2016	0.085	Nov 2017	-		0.085	Continuing	Continuing	Continuing
		Subtotal	0.822	0.050		0.060		0.085		-		0.085	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604601N / *Mine Development*	Project (Number/Name) 0267 / *Mine Improvements*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft interface & survivability testing	WR	NSWC PC : Panama City, FL	0.000	0.000		1.525	May 2017	0.000		-		0.000	0.000	1.525	-
Development Test & Evaluation	WR	NSWC PC : Panama City, FL	29.071	2.676	Nov 2015	2.540	Nov 2016	5.468	Oct 2017	-		5.468	0.000	39.755	-
		Subtotal	29.071	2.676		4.065		5.468		-		5.468	0.000	41.280	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support	C/CPAF	Various : Various	36.202	0.050	Nov 2015	0.050	Dec 2016	0.050	Oct 2017	-		0.050	0.000	36.352	-
Program Management Support	C/CPAF	Various : Various	0.728	0.000		0.000		0.020	Oct 2017	-		0.020	Continuing	Continuing	Continuing
Travel	Various	NAVSEA : Washington DC	0.074	0.000		0.010	Sep 2017	0.010	Oct 2017	-		0.010	Continuing	Continuing	Continuing
DAWDF	Various	Various : Various	0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	-
		Subtotal	37.014	0.050		0.060		0.080		-		0.080	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	222.268	12.602		15.290		17.617		-		17.617	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604601N / *Mine Development*	**Project (Number/Name)** 0267 / *Mine Improvements*

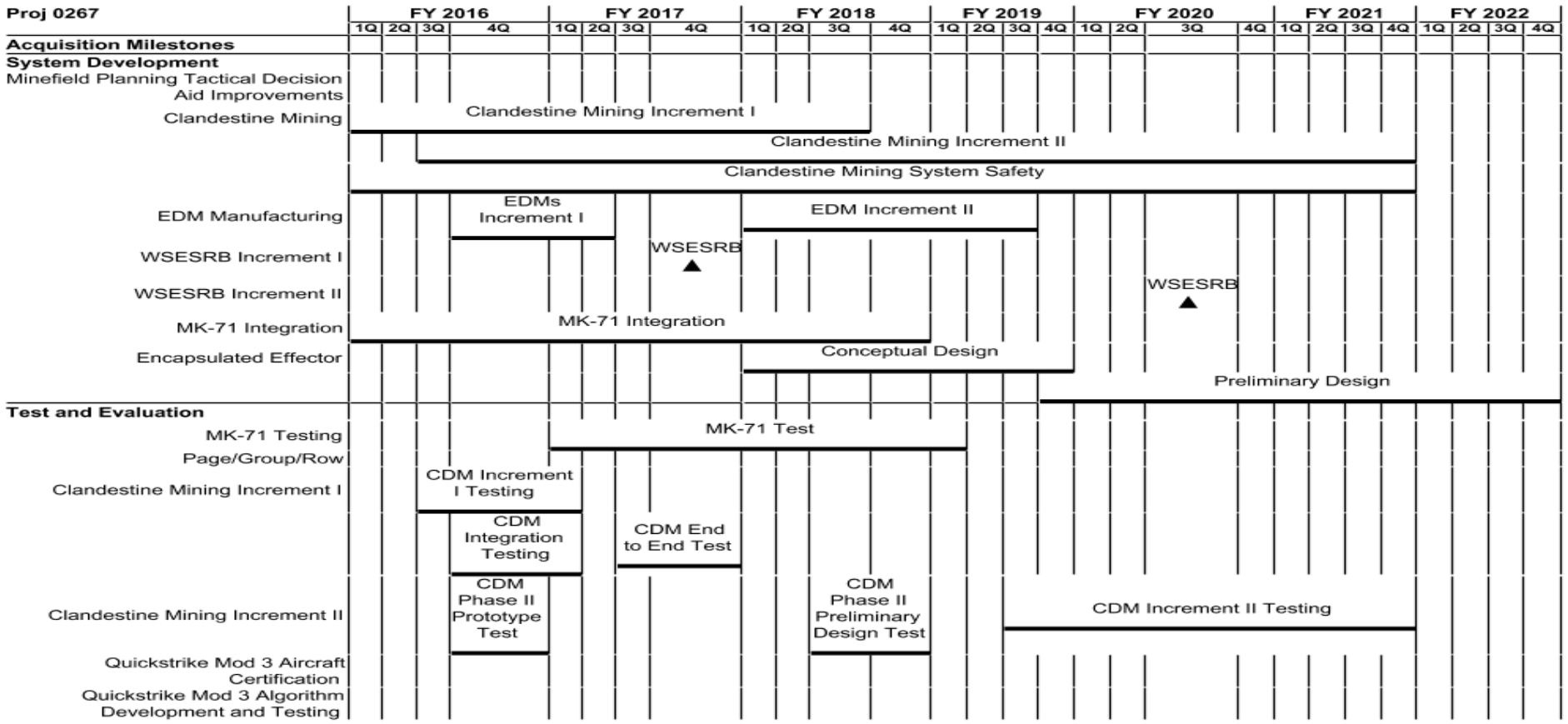

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604601N / *Mine Development*	**Project (Number/Name)** 0267 / *Mine Improvements*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0267				
System Development: Clandestine Mining: Increment I	1	2016	3	2018
System Development: Clandestine Mining: Increment II	3	2016	4	2021
System Development: Clandestine Mining: System Safety	1	2016	4	2021
System Development: EDM Manufacturing: EDM Manfacturing Increment I	4	2016	2	2017
System Development: EDM Manufacturing: EDM Maufacturing Increment II	1	2018	3	2019
System Development: WSESRB Increment I: Increment I	4	2017	4	2017
System Development: WSESRB Increment II: Increment II	3	2020	3	2020
System Development: MK-71 Integration: MK-71 Integration	1	2016	4	2018
Test and Evaluation: MK-71 Testing: MK-71 Test	1	2017	1	2019
Test and Evaluation: Clandestine Mining Increment I: Increment I Testing	3	2016	1	2017
Test and Evaluation: Clandestine Mining Increment I: CDM Integration Testing	4	2016	1	2017
Test and Evaluation: Clandestine Mining Increment I: End to End Test	3	2017	4	2017
Test and Evaluation: Clandestine Mining Increment II: Testing	3	2019	4	2021
Test and Evaluation: Clandestine Mining Increment II: CDM Phase II Prototype Test	4	2016	4	2016
Test and Evaluation: Clandestine Mining Increment II: CDM Phase II Preliminary Design Test	3	2018	4	2018

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604601N / *Mine Development*	Project (Number/Name) 2993 / *Encapsulated Effector*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2993: *Encapsulated Effector*	36.202	0.000	0.000	8.018	-	8.018	7.482	6.976	2.477	10.977	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Encapsulated Effector transitions technology developed by the Advanced Undersea Weapon System (AUWS) Enabling Capability starting in FY18. The program provides maritime mining capability in intermediate water depths compared to existing bottom mines, uses existing kinetic payloads to engage enemy targets, and provides a wide area of coverage per each weapon. The program uses a weapon which is self-contained and is released when a target is detected and uses mobility to engage the target. The system uses modern sensing and processing technology to enable accurate targeting at increased range, incorporates remote control to allow operational flexibility to active/deactivate and/or change targeting parameters, and maintain minefield resilience even as weapons are expended against targets. The result is expanded operating areas to restrict or deny adversary access to the intended area while using fewer weapons than traditional mines.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development	0.000	0.000	7.693	0.000	7.693
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: N/A					
FY 2018 Base Plans: Conduct engineering analysis to allocate requirements to subsystems, develop engineering architecture products, and document the conceptual design baseline. generate a technical data package to solicit feedback on the system safety approach from the Navy Weapon System Explosive Safety Review Board. Begin development of engineering guiding documents such as the Systems Engineering Plan and Test and Evaluation Master Plan. Coordinate transition of technology products from the Office of Naval Research's Advanced Undersea Weapon System Future Naval Capability program. Research existing decision support systems applicable to undersea warfare mission planning and develop requirements for integration of minefield planning capabilities into those systems. Perform rapid prototyping of design concepts to assess feasibility and interoperability with host platform and various subcomponent elements.					
FY 2018 OCO Plans: N/A					
Title: Support	0.000	0.000	0.205	0.000	0.205

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604601N / *Mine Development*	**Project (Number/Name)** 2993 / *Encapsulated Effector*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Provide Information Assurance (IA) and technical support of Mine Warfare development lab. Provide cyber security analysis and documentation in support of the remote control of the Encapsulated Effector. ***FY 2018 OCO Plans:*** N/A					
Title: Management:	0.000	0.000	0.120	0.000	0.120
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Program Management Support, contract support and Travel ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	8.018	0.000	8.018

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The encapsulated effector plans to leverage Navy warfare center expertise to perform requirements analysis and engineering architecture design to identify mature technologies to meet the operational objectives. Those engineering products will be provided to a prime contractor for final system integration and testing. The

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604601N / *Mine Development*	**Project (Number/Name)** 2993 / *Encapsulated Effector*

contractor will be responsible for the final design to optimize producibility, manufacture engineering design models to be used during testing, and test planning and execution to gather the required data to support a production decision.

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604610N *I Lightweight Torpedo Development*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	302.382	42.548	20.178	28.076	-	28.076	52.607	82.750	94.966	86.916	Continuing	Continuing
1412: *HAAWC*	0.000	0.000	0.000	8.516	-	8.516	4.088	7.097	0.000	0.000	0.000	19.701
2234: *Lightweight Hybrid Torpedo*	292.712	32.893	20.178	19.560	-	19.560	13.700	14.036	14.457	14.751	Continuing	Continuing
3418: *Advanced Anti-Submarine Lightweight Torpedo*	0.000	0.000	0.000	0.000	-	0.000	34.819	61.617	80.509	72.165	Continuing	Continuing
9999: *Congressional Adds*	9.670	9.655	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.325

A. Mission Description and Budget Item Justification

The Lightweight Torpedo (LWT) program designs, integrates and tests the LWT MK 54. The LWT development program provides performance improvements in shallow water and counter-measure environments. The Engineering Development Model (EDM) contract has delivered 21 MK 54 MOD 1 EDM units to support the in-water test program. The EDM contract for the MK 54 MOD 1 was awarded to Progeny Systems Corporation in September 2008. The High Altitude Anti-Submarine Warfare Weapon Capability (HAAWC) development and Low Rate Initial Production (LRIP) contract was awarded to Boeing on April 2013. Initial Operating Capability (IOC) of the MK 54 MOD 0 was achieved in 2004. IOC of the MK 54 equipped Vertical Launch Anti-submarine Rocket (VLA) was achieved in 2010.

Budget supports Pre-Planned Product Improvement (P3I) program using an incremental developmental acquisition approach combining hardware and Advanced Processor Build (APB) software upgrades to enable rapid fielding of improvements to the fleet. The P3I program will focus on common LWT and Heavyweight Torpedo (HWT) hardware and software architecture enhancements that will provide re-architecture, broadband array improvements, and APB software improvements. Future APB software builds will utilize the common torpedo software to deliver software and tactics to both the MK 54 LWT, and MK 48 Advanced Capability (ADCAP). The P3I program will also support development of enhanced weapon delivery methods, including the high altitude launch of the MK 54 from the P-8A Maritime Patrol Reconnaissance Aircraft (MPRA) with the HAAWC.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604610N *I Lightweight Torpedo Development*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	43.738	20.178	19.497	-	19.497
Current President's Budget	42.548	20.178	28.076	-	28.076
Total Adjustments	-1.190	0.000	8.579	-	8.579
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.190	0.000			
• Program Adjustments	0.000	0.000	8.321	-	8.321
• Rate/Misc Adjustments	0.000	0.000	0.258	-	0.258

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2016	FY 2017
Project: 9999: *Congressional Adds*		
Congressional Add: *LWT SBIR (Cong)*	9.655	0.000
Congressional Add Subtotals for Project: 9999	9.655	0.000
Congressional Add Totals for all Projects	9.655	0.000

Change Summary Explanation

Funding: In FY 2018, funding was realigned from Proj: 2234 Lightweight Hybrid Torpedo to Proj: 1412 HAAWC to differentiate HAAWC funding from MK 54 MOD 1 funding.

Schedule: Delay in completion of the MK 54 MOD 1 Developmental Testing (DT) is due to test ship availability. Delay in initiation of the MK 54 MOD 1 Operational Testing (OT) is due to delays in completion of the MK 54 MOD 1 DT. Delays in HAAWC Design/Development/Qualification, DT, OT, Production Readiness Review (PRR) and IOC are due to contractor identified delays in concept development; requiring funding adjustments to execute to this schedule.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604610N / *Lightweight Torpedo Development*	Project (Number/Name) 1412 / *HAAWC*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1412: *HAAWC*	0.000	0.000	0.000	8.516	-	8.516	4.088	7.097	0.000	0.000	0.000	19.701
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The program will design, develop, and procure a High Altitude Anti-Submarine Warfare Weapon Capability (HAAWC) Air Launch Accessory (ALA) for the MK 54 Lightweight Torpedo (LWT). This capability will allow employment of the MK 54 outside the current fixed wing launch envelope. This includes the ability to employ the MK 54 LWT at high altitude, with stand-off ranges, and with the ability for precision guidance to the intended water entry point (WEP) without affecting the in-water operation of the LWT. This ALA is intended for employment with the Navy's latest Maritime Patrol and Reconnaissance Aircraft (MPRA), the P-8A Poseidon.

FY 2020 achievement of HAAWC IOC

HAAWC program was previously funded in FY 2016 - FY 2017 from Proj. 2234 Lightweight Hybrid Torpedo.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: High Altitude Anti-Submarine Warfare Weapon Capability (HAAWC) Development	0.000	0.000	8.516	0.000	8.516
Articles:	-	-	-	-	-
FY 2016 Accomplishments: HAAWC is funded in FY 2016 from Proj. 2234 Lightweight Hybrid Torpedo.					
FY 2017 Plans: HAAWC is funded in FY 2017 from Proj. 2234 Lightweight Hybrid Torpedo.					
FY 2018 Base Plans: Milestone C Review Low Rate Initial Production (LRIP) 1 Award Conduct System Verification Review (SVR) Conduct Physical Configuration Audit (PCA) Conduct Flight Readiness Review (FRR)					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	8.516	0.000	8.516

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604610N / *Lightweight Torpedo Development*	**Project (Number/Name)** 1412 / *HAAWC*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Engineering and Manufacturing Development (EMD) contract held by Boeing Company supports an incremental approach to delivering full HAAWC capability, Air Launch Accessory (ALA) assets and equipment, as well as associated engineering services and support. The schedule for the completion of the EMD phase of the MK 54 HAAWC AUR development is closely linked to the P-8A Increment 2 design and integration schedule. The EMD contract was awarded in April 2013, with options for the procurement of LRIP units. The EMD contract type includes cost-plus-fixed-fee, cost-plus-incentive-fee, cost-fixed-price-incentive, and firm-fixed-price line items. A future full rate production fixed-price-incentive-fee contract will be evaluated for competitive award to a single contractor. Contract award would be in FY 2020, upon successfully meeting IOC requirements and conducting a Full Rate Production Decision Review.

E. Performance Metrics

Milestone reviews
Program Management reviews
System engineering technical review
Earned value management reviews

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604610N / *Lightweight Torpedo Development*	Project (Number/Name) 2234 / *Lightweight Hybrid Torpedo*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2234: *Lightweight Hybrid Torpedo*	292.712	32.893	20.178	19.560	-	19.560	13.700	14.036	14.457	14.751	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The program designs, integrates and tests the LWT MK54. The LWT provides performance improvements in shallow water, counter-measure environments. The EDM contract was awarded to Raytheon Systems Company in June 1996. IOC of the MK 54 MOD 0 achieved in 2004. IOC of MK 54 equipped VLA achieved in 2010.

FY 2023 achievement of MK 54 MOD 1 IOC

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: MK54 Pre-Planned Product Improvement	32.893	20.178	19.560	0.000	19.560
Articles:	-	-	-	-	-
Description: MK54 P3I includes the MK54 VLA integration and HAAWC programs. Starting in FY 2018, HAAWC will be funded in Proj. 1412.					
FY 2016 Accomplishments: Conducted MK 54 MOD 1 DT Continued development of hardware/software improvements for P3I program Conducted HAAWC Flight Tests #1 and #2 Conducted HAAWC System Critical Design Review (CDR) Conducted HAAWC Container Critical Design Review (CDR) Conducted MK54 MOD 1 LWT MS C review					
FY 2017 Plans: Continue MK 54 MOD 1 DT Continue MK 54 MOD 1 Software Development Conduct HAAWC Independent Logistics Assessment (ILA) Conduct HAAWC Production Readiness Review (PRR) HAAWC Contractor Test Flights completion Conduct HAAWC Qualification Test Readiness Review (TRR)					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604610N / *Lightweight Torpedo Development*	**Project (Number/Name)** 2234 / *Lightweight Hybrid Torpedo*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Delivery of all HAAWC Proof of Manufacture (POM) Hardware ***FY 2018 Base Plans:*** Continue MK 54 MOD 1 DT Continue MK 54 MOD 1 Software Development ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	32.893	20.178	19.560	0.000	19.560

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• WPN/3215: *MK54 Torpedo Mods*	113.219	98.092	104.044	-	104.044	116.963	128.946	143.892	146.788	0.000	1,732.801

Remarks

D. Acquisition Strategy

The EDM contract held by Raytheon Systems Company supported an incremental upgrade strategy to counter evolving threats. The award of EDM contracts among qualified producers included both hardware and software upgrades. The contract was awarded as a cost-plus-award fee in June 1996, and was converted to cost-plus-incentive fee in December 1998. Sole source production contract awarded in FY 2004 for MK 54 LWT. The MK 54 LWT kit fixed-price-incentive (firm target) procurement contract was awarded in September 2011 to Raytheon Systems Company. The MK 54 MOD 1 cost-plus-fixed-fee development contract was awarded to Progeny in September 2008. A sole source production contract will be awarded to Progeny for the production of MOD 1 kits.

E. Performance Metrics

Milestone reviews
System engineering technical review
Earned value management reviews

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604610N / *Lightweight Torpedo Development*	**Project (Number/Name)** 2234 / *Lightweight Hybrid Torpedo*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Development - PRIOR YEAR	WR	NUWC : Newport/ Keyport	47.640	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Hardware Development - MK 54 MOD 1	WR	NUWC : Newport	0.000	1.025	Nov 2015	0.360	Oct 2016	2.973	Nov 2017	-		2.973	0.000	4.358	-
Hardware Development - MK 54 MOD 1	SS/FP	Progeny Systems : Not Specified	24.394	0.000		0.000		0.000		-		0.000	0.000	24.394	-
Hardware Development - HAAWC	WR	NSWCCD : Carderock, MD	0.050	0.000		0.000		0.000		-		0.000	0.000	0.050	-
Hardware Development - HAAWC	C/CPAF	Boeing : St. Louis, MO	71.281	20.422	Dec 2015	6.518	Oct 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Hardware Development - HAAWC	WR	NSWCDD : Dahlgren, VA	0.400	0.000		0.000		0.000		-		0.000	0.000	0.400	-
Hardware Development - HAAWC	WR	NSWC : Indian Head	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Hardware Development - INSENSITIVE MUNITIONS	WR	NUWC : Newport	0.000	0.210	Dec 2015	0.210	Oct 2016	0.000		-		0.000	0.000	0.420	-
Hardware Development - INSENSITIVE MUNITIONS	WR	NSWC : Indian Head, MD	0.000	0.240	Dec 2015	0.240	Oct 2016	0.110	Jan 2018	-		0.110	0.000	0.590	-
HHardware Development - INSENSITIVE MUNITIONS	WR	NUWC : Keyport	0.000	0.000		0.000		0.199	Nov 2017	-		0.199	0.000	0.199	-
Hardware Development - PRIOR YEAR	WR	NSWC : Indian Head, MD	5.030	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Software Development - PRIOR YEAR	WR	NUWC : Newport/ Keyport	19.789	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Software Development - MK 54 MOD 1	WR	NUWC : Newport	0.000	0.010	Oct 2015	0.000		0.415	Oct 2017	-		0.415	0.000	0.425	-
Software Development - MK 54 MOD 1	MIPR	MIT : Boston, MA	0.673	0.337	Jan 2016	0.348	Jan 2017	0.349	Feb 2018	-		0.349	0.000	1.707	-
Software Development - MK 54 MOD 1	C/BA	ARL/PSU : Philadephia, PA	0.201	0.207	Jan 2016	0.213	Jan 2017	0.219	Jan 2018	-		0.219	0.000	0.840	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604610N / *Lightweight Torpedo Development*	**Project (Number/Name)** 2234 / *Lightweight Hybrid Torpedo*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering - VLA	SS/FP	Lockheed Martin: VLA : Akron, OH	7.606	0.000		0.000		0.000		-		0.000	0.000	7.606	-
Systems Engineering - HAAWC	WR	NSWC PMA 290 : Patuxent, MD	8.082	0.500	Oct 2015	1.000	Oct 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering - HAAWC	WR	NAWCWD : China Lake	5.106	0.500	Oct 2015	1.000	Oct 2016	0.000		-		0.000	0.000	6.606	-
Systems Enginnering - HAAWC	C/CPFF	John Hopkins University : Baltimore, MD	0.050	0.000		0.000		0.000		-		0.000	0.000	0.050	-
Systems Engineering	SS/FP	SPA Inc. : Not Specified	0.640	0.000		0.000		0.000		-		0.000	0.000	0.640	-
Systems Engineering	WR	Naval Operational Logistics Support Center (NOLSC) : Not Specified	0.025	0.000		0.000		0.000		-		0.000	0.000	0.025	-
System Test & Evaluation - HAAWC	WR	NUWC : Newport/ Keyport	21.231	0.350	Nov 2015	0.350	Oct 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Hardware Development - ADV LWT	WR	NUWC : Newport	0.000	0.000		0.000		2.040	Oct 2017	-		2.040	0.000	2.040	-
Hardware Development - ADV LWT	WR	NUWC : Keyport	0.000	0.000		0.000		0.213	Oct 2017	-		0.213	0.000	0.213	-
Hardware Development - ADV LWT	WR	NSWC : Indian Head, MD	0.000	0.000		0.000		0.575	Oct 2017	-		0.575	0.000	0.575	-
		Subtotal	212.198	23.801		10.239		7.093		-		7.093	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Development	WR	NUWC : Newport/ Keyport	3.889	0.458	Oct 2015	1.000	Oct 2016	0.310	Nov 2017	-		0.310	0.000	5.657	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604610N / *Lightweight Torpedo Development*	Project (Number/Name) 2234 / *Lightweight Hybrid Torpedo*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NUWC : Newport/ Keyport	6.219	1.362	Oct 2015	1.362	Oct 2016	2.605	Dec 2017	-		2.605	0.000	11.548	-
Program Management Support	C/BA	ARL/PSU : Philadephia, PA	0.441	0.000		0.000		0.000		-		0.000	0.000	0.441	-
Program Management Support	Various	NAVSEA : Not Specified	0.168	0.000		0.000		0.000		-		0.000	0.000	0.168	-
Systems Engineering	WR	NUWC : Newport/ Keyport	0.120	0.000		0.000		0.000		-		0.000	0.000	0.120	-
System Test and Evaluation	WR	NUWC : Newport/ Keyport	27.096	1.444	Oct 2015	1.753	Oct 2016	2.507	Nov 2017	-		2.507	Continuing	Continuing	Continuing
Hardware Development	WR	NSWC : Indian Head, MD	0.000	0.000		0.000		0.050	Oct 2017	-		0.050	0.000	0.050	-
Program Management Support	WR	NSWC : Indian Head, MD	0.000	0.000		0.000		0.200	Oct 2017	-		0.200	0.000	0.200	-
		Subtotal	37.933	3.264		4.115		5.672		-		5.672	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering - MK 54 MOD 1	WR	NSWC : Carderock	0.784	0.475	Oct 2015	0.000		0.000		-		0.000	0.000	1.259	-
System Test and Evaluation - PRIOR YEAR	WR	NUWC : Newport/ Keyport	32.191	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
System Test and Evalution - MK 54 MOD 1	WR	NUWC : Keyport	0.000	1.097	Oct 2015	1.357	Oct 2016	2.481	Dec 2017	-		2.481	0.000	4.935	-
System Test and Evaluation - MK 54 MOD 1	WR	NUWC : Newport	0.000	1.561	Oct 2015	2.501	Oct 2016	2.889	Dec 2017	-		2.889	0.000	6.951	-
System Test and Evaluation - MK 54 MOD 1	WR	NSWC : Indian Head, MD	0.773	0.570	Oct 2015	0.233	Oct 2016	0.000		-		0.000	0.000	1.576	-
System Test and Evaluation - MK 54 MOD 1	C/CPIF	ARL/PSU : Philadephia, PA	0.068	0.000		0.000		0.000		-		0.000	0.000	0.068	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604610N / *Lightweight Torpedo Development*	**Project (Number/Name)** 2234 / *Lightweight Hybrid Torpedo*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Test and Evaluation - MK 54 MOD 1	WR	Aberdeen Test Center : Aberdeen, MD	0.318	0.413	Oct 2015	0.000		0.000		-		0.000	0.000	0.731	-
System Test and Evaluation - MK 54 MOD 1	WR	OPTEVFOR : Not Specified	0.000	0.750	Oct 2015	0.250	Oct 2016	0.416	Nov 2017	-		0.416	0.000	1.416	-
System Test and Evaluation - PRIOR YEAR	WR	OPTEVFOR : Not Specified	3.490	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
System Test and Evaluation - HAAWC	WR	OPTEVFOR : Not Specified	0.000	0.250	Nov 2015	0.500	Oct 2016	0.000		-		0.000	0.000	0.750	-
System Test and Evaluation - HAAWC	WR	NSWC : Dalgren, VA	0.000	0.091	Oct 2015	0.000		0.000		-		0.000	0.000	0.091	-
System Test and Evaluation - HAAWC	WR	NUWC : Keyport	0.000	0.152	Oct 2015	0.466	Oct 2016	0.000		-		0.000	0.000	0.618	-
System Test and Evaluation - HAAWC	WR	NUWC : Newport	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
System Test and Evaluation - WEAPON TRANSPORT	WR	NUWC : Keyport	0.000	0.026	Oct 2015	0.027	Oct 2016	0.028	Oct 2017	-		0.028	0.000	0.081	-
System Test and Evaluation - ADV LWT	WR	NUWC : Newport	0.000	0.000		0.000		0.138	Oct 2017	-		0.138	0.000	0.138	-
System Test and Evalution - ADV LWT	WR	NUWC : Keyport	0.000	0.000		0.000		0.038	Oct 2017	-		0.038	0.000	0.038	-
System Test and Evaluation - ADV LWT	WR	NSWC : Indian Head, MD	0.000	0.000		0.000		0.075	Oct 2017	-		0.075	0.000	0.075	-
		Subtotal	37.624	5.385		5.334		6.065		-		6.065	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	WR	NAVSEA : Not Specified	0.432	0.027	Oct 2015	0.028	Oct 2016	0.029	Jan 2018	-		0.029	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604610N / *Lightweight Torpedo Development*	**Project (Number/Name)** 2234 / *Lightweight Hybrid Torpedo*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	Alion Science : Washington, DC	3.618	0.416	Oct 2015	0.462	Oct 2016	0.701	Mar 2018	-		0.701	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	ARL/PSU : Philadephia, PA	0.588	0.000	Oct 2015	0.000		0.000		-		0.000	0.000	0.588	-
Program Management Support	Various	NAVSEA : Not Specified	0.093	0.000		0.000		0.000		-		0.000	0.000	0.093	-
Acquisition Workforce Fund	Various	Not Specified : Not Specified	0.226	0.000		0.000		0.000		-		0.000	0.000	0.226	-
		Subtotal	4.957	0.443		0.490		0.730		-		0.730	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	292.712	32.893		20.178		19.560		-		19.560	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604610N / *Lightweight Torpedo Development*	**Project (Number/Name)** 2234 / *Lightweight Hybrid Torpedo*

MK 54 MOD 1 Acquisition Schedule

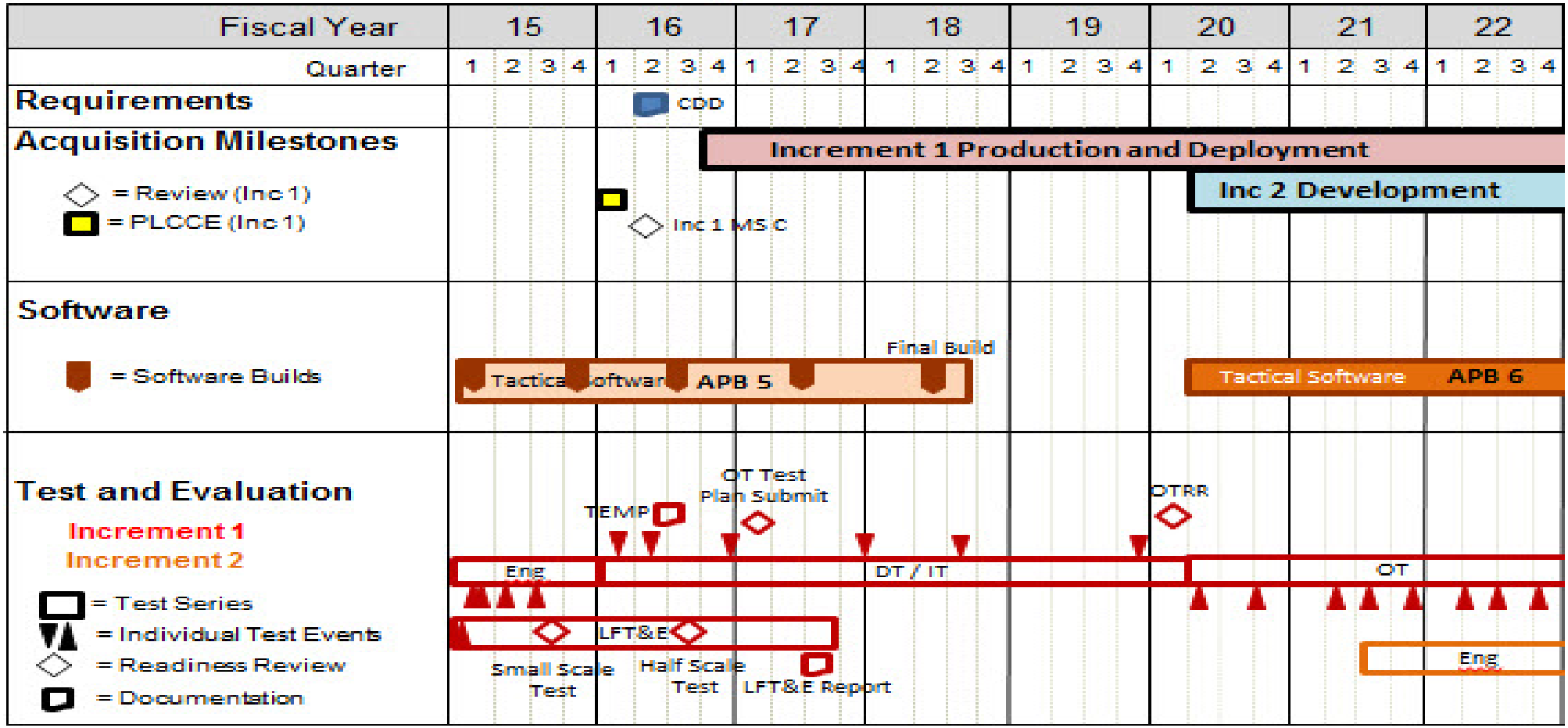

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604610N / *Lightweight Torpedo Development*	**Project (Number/Name)** 2234 / *Lightweight Hybrid Torpedo*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2234				
Tech Insertion 1 (TI-1) APB 5 / New Array DT to MK54 MOD 1	1	2016	1	2020
Tech Insertion 1 (TI-1) APB 5 / New Array OT to MK54 MOD 1	2	2020	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604610N / *Lightweight Torpedo Development*	Project (Number/Name) 3418 / *Advanced Anti-Submarine Lightweight Torpedo*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3418: *Advanced Anti-Submarine Lightweight Torpedo*	0.000	0.000	0.000	0.000	-	0.000	34.819	61.617	80.509	72.165	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Fund development of an Advanced Lightweight Torpedo capable of prosecuting high-speed and high hull-strength adversary submarines.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604610N / *Lightweight Torpedo Development*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9999: *Congressional Adds*	9.670	9.655	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.325
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Congressional Add for Small Business Technology Insertion.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017
Congressional Add: LWT SBIR (Cong) ***FY 2016 Accomplishments:*** Develop producability improvements, COTS modernization, and test equipment upgrades. ***FY 2017 Plans:*** N/A	9.655	0.000
Congressional Adds Subtotals	9.655	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Milestone reviews
System engineering technical review
Earned value management reviews

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604654N *I JT Service EOD*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	291.680	8.123	7.369	7.561	-	7.561	7.223	7.526	7.639	7.793	Continuing	Continuing
1829: *Expl Ord Disp Proc*	291.680	8.123	7.369	7.561	-	7.561	7.223	7.526	7.639	7.793	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program provides for the development of key identification features and safety information used by Joint Service EOD personnel when performing their mission of detecting, locating, accessing, identifying, Render-Safe/Neutralize, and disposing or recovery of both foreign and domestic Unexploded Explosive Ordnance (UXO), Improvised Explosive Devices (IED), and Weapons of Mass Destruction (WMD) that pose a threat to military operations, installations, personnel, and materials.

In addition, EOD Render-Safe Procedures (RSP) of foreign ordnance and other explosive hazards must be developed as soon as possible after gaining knowledge of its existence. This effort requires acquisition, exploitation, and analysis of the foreign ordnance prior to the development of EOD procedures.

The program also provides for the development and evaluation of prototypical EOD Tier Two solutions sets for threats identified in the National Response Framework. This effort provides resources essential to the Foreign Threat Mine Acquisition/Exploitation (FTMA/E) program that includes; acquisition, inert certification, intelligence and operational exploitation, analysis, procedure development, and disposition of the highest priority foreign threat naval mines.

As defined in DOD Directive 5160.62, assigns the Secretary of the Navy (SECNAV) the responsibility of Single Manager for Explosive Ordnance Disposal (EOD) Technology and Training (T&T). The Executive Manager for EODT&T is to provide for the preparation, technical development, validation, Joint Service approval, and distribution of all EOD procedures and countermeasures to include; publications, manuals, bulletins, texts, and graphic aids.

This program is a non-acquisition program (without traditional acquisition milestones) with on-going, continuous delivery of urgent and periodic documented procedures and publications for mines, ordnance items, weapons systems, Improvised Explosive Devices, Weapons of Mass Destruction, and related explosive hazards.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604654N / *JT Service EOD*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	8.123	7.369	7.579	-	7.579
Current President's Budget	8.123	7.369	7.561	-	7.561
Total Adjustments	0.000	0.000	-0.018	-	-0.018
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-0.018	-	-0.018

Change Summary Explanation

Program Adjustments: Other Rate/Misc Adjustments (MISC) $18K.
Technical: Not applicable.

Schedule: Not applicable.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604654N / *JT Service EOD*	Project (Number/Name) 1829 / *Expl Ord Disp Proc*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1829: *Expl Ord Disp Proc*	291.680	8.123	7.369	7.561	-	7.561	7.223	7.526	7.639	7.793	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides for the development of key identification features and safety information used by Joint Service EOD personnel when performing their mission of detecting, locating, accessing, identifying, Render-Safe/Neutralize, and disposing or recovery of both foreign and domestic Unexploded Explosive Ordnance (UXO), Improvised Explosive Devices (IED), and Weapons of Mass Destruction (WMD) that pose a threat to military operations, installations, personnel, and materials.

In addition, EOD Render-Safe Procedures (RSP) of foreign ordnance and other explosive hazards must be developed as soon as possible after gaining knowledge of its existence. This effort requires acquisition, exploitation, and analysis of the foreign ordnance prior to the development of EOD procedures.

The program also provides for the development and evaluation of prototypical EOD Tier Two solutions sets for threats identified in the National Response Framework. This effort provides resources essential to the Foreign Threat Mine Acquisition/Exploitation (FTMA/E) program that includes; acquisition, inert certification, intelligence and operational exploitation, analysis, procedure development, and disposition of the highest priority foreign threat naval mines.

As defined in DOD Directive 5160.62, assigns the Secretary of the Navy (SECNAV) the responsibility of Single Manager for Explosive Ordnance Disposal (EOD) Technology and Training (T&T). The Executive Manager for EODT&T is to provide for the preparation, technical development, validation, Joint Service approval, and distribution of all EOD procedures and countermeasures to include; publications, manuals, bulletins, texts, and graphic aids.

This program is a non-acquisition program (without traditional acquisition milestones) with on-going, continuous delivery of urgent and periodic documented procedures and publications for mines, ordnance items, weapons systems, Improvised Explosive Devices, Weapons of Mass Destruction, and related explosive hazards.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Render-Safe Procedures Development	3.420	2.988	2.660	0.000	2.660
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Identified, reverse engineer, analyzed and exploited ordnance items for the purpose of developing and or updating EOD render-safe procedures.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604654N / *JT Service EOD*	**Project (Number/Name)** 1829 / *Expl Ord Disp Proc*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Identify, analyze, exploit and reverse engineer prioritized ordnance items for the purpose of developing EOD render safe procedures and Disposal Procedures. ***FY 2018 Base Plans:*** Identify, analyze, exploit, and reverse engineer foreign and domestic conventional ordnance, munitions, weapons systems, and their associated explosive hazards, for the purpose of developing and or updating EOD render-safe and disposal procedures. ***FY 2018 OCO Plans:*** N/A					
Title: Improvised Explosive Device (IED), Weapons of Mass Destruction (WM) Countermeasures ***Articles:*** ***FY 2016 Accomplishments:*** Analyzed and exploit IED and WMD threats. Develop new or updated specialized procedures for EOD response elements and maintain technologies to stay ahead of the evolving IED and WMD threats. ***FY 2017 Plans:*** Develop and prioritize specialize procedures for EOD response tactics and techniques to stay ahead of the evolving IED and WMD threats. ***FY 2018 Base Plans:*** Analyze and exploit IEDs and WMDs (to include chemical, biological, radiological, or nuclear weapons) threats for the purpose of developing and or updating EOD countermeasures and procedures to neutralize the threat. ***FY 2018 OCO Plans:*** N/A	2.510 -	1.805 -	2.338 -	0.000 -	2.338 -
Title: Foreign Mine Acquisition ***Articles:*** ***FY 2016 Accomplishments:*** Acquired acquisition high priority foreign threat naval mines for analysis and exploitation to support development of countermeasure procedures. ***FY 2017 Plans:***	2.193 -	2.576 -	2.563 -	0.000 -	2.563 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604654N / *JT Service EOD*	**Project (Number/Name)** 1829 / *Expl Ord Disp Proc*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Acquire high priority foreign threat naval mines for analysis and exploitation in support of development of EOD countermeasure procedures. ***FY 2018 Base Plans:*** Acquire high priority foreign threat naval mines for analysis and exploitation in support of development of EOD countermeasure procedures ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	8.123	7.369	7.561	0.000	7.561

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This is a non-acquisition program.

E. Performance Metrics

Analyzed and exploited foreign and domestic ordnance resulting in the development of 3,711 ordnance and weapons systems publications providing essential identification features, functioning characteristics, safety information and other EOD specific technical information to include 22 validated Render-Safe and Disposal procedures. Additionally, 1,038 Improvised Explosive Device (IED) and 253 Weapons of Mass Destruction (WMD) publications were developed or updated which included the development and validation of 14 EOD specific Render-Safe/Neutralization procedures.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604703N *I Personnel, Trng, Sim, & Human Factors*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	24.153	7.408	18.995	40.828	-	40.828	7.012	8.326	8.493	8.663	Continuing	Continuing
1822: *Manpower Pers & Human Fact System*	24.153	7.408	18.995	40.828	-	40.828	7.012	8.326	8.493	8.663	Continuing	Continuing

A. Mission Description and Budget Item Justification

This non-acquisition category program provides funds for continued (but less risky) R&D for broader application of advanced technologies to transition successful research proof-of-concept demonstrations into operational use. Development of prototype systems to support and/or improve operational requirements of manpower and personnel sponsors is the primary goal of this Engineering Development Program. The R&D Program features the use of a broad range of technologies from cognitive science, human systems integration, learning management, content management & delivery, learning and ability testing techniques, mathematical modeling and optimization, statistical and econometric forecasting, intelligent systems, data visualization, data mining, simulation, decision support systems, and new services oriented architectures to include applications, databases and communications configuration. This non-acquisition category program provides funds for continued R&D for broader application of advanced training technologies and the science of learning to transition successful research proof of concept demonstrations and rapid prototyping of Commercial off the Shelf/Government off the Shelf (COTS/GOTS) technologies into operational use.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	7.686	4.995	6.719	-	6.719
Current President's Budget	7.408	18.995	40.828	-	40.828
Total Adjustments	-0.278	14.000	34.109	-	34.109
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.278	0.000			
• Program Adjustments	0.000	14.000	34.109	-	34.109
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604703N *I Personnel, Trng, Sim, & Human Factors*

FY18 increase of $34.109 million is required to address emergency/emergent war fighting readiness requirements.
Additional funds support the continuation of IT system modernization for personnel management. Upgrades will provide information infrastructure that will streamline data from disparate and dated databases to bring personnel management and learning together into a common operating picture and significantly reduce the number of legacy business systems down from 55. This integration and updated technology will enable Sailors to transmit decisions from a mobile environment and unlock data stores for leaders that will provide visibility to enable more effective and efficient management.

The FY 2018 funding request was reduced by $1.000 million to account for the availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	Project (Number/Name) 1822 / *Manpower Pers & Human Fact System*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1822: *Manpower Pers & Human Fact System*	24.153	7.408	18.995	40.828	-	40.828	7.012	8.326	8.493	8.663	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This non-acquisition category program provides funds for continued (but less risky) R&D for broader application of advanced technologies to transition successful 6.3 research proof-of-concept demonstrations into operational use. Development of prototype systems to support and/or improve operational requirements of manpower and personnel sponsors is the primary goal of this Engineering Development Program. The 6.5 R&D Program features the use of a broad range of technologies from cognitive science and ability testing techniques, mathematical modeling and optimization, statistical and econometric forecasting, intelligent systems, data visualization, data mining, simulation, decision support systems and new database and communications configuration.

The program also provides continued R&D for broader application of advanced technologies to transition successful research proof-of-concept demonstrations into operational use. This PE provides funding to support the transition of models and decision support tools from RDT&E funded to production and into the hands of analysts and program managers throughout the Manpower, Personnel, Training and Education enterprise. The PE also supports the application of proven industry models, tools and methodologies to Navy MPTE problems where GOTS solutions are non-existent. The second goal of the PE is to successfully implement 90% of the industry-standard tools that are attempted to be used in Navy applications. In this case the Naval War College procuring and modifying an integrated, state-of-the-art information management / knowledge-management (IM / KM) system that environment that supports the College's unique educational and research activities. Informed by IM/KM best practices, elements of this environment will enhance the NWC's ability to achieve objectives in its mission areas of education, research, cooperative / international engagement, and combat readiness. This effort will allow NWC to support the CJCS' vision for education as a career/lifelong learning endeavors, Navy's education strategy and CNO's Sailor 2025 initiative by dramatically increasing NWC communication of research, gaming and education results to the broader military and Navy communities.

FY18 increase of $34.109M is required to address emergency/emergent war fighting readiness requirements.
Additional funds support the continuation of IT system modernization for personnel management. Upgrades will provide information infrastructure that will streamline data from disparate and dated databases to bring personnel management and learning together into a common operating picture and significantly reduce the number of legacy business systems down from 55. This integration and updated technology will enable Sailors to transmit decisions from a mobile environment and unlock data stores for leaders that will provide visibility to enable more effective and efficient management.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Manpower Pers & Human Fact System	7.408	18.995	40.828	0.000	40.828
Articles:	6	5	6	-	6

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	**Project (Number/Name)** 1822 / *Manpower Pers & Human Fact System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: This program is funded under RDT&E operational systems development because it encompasses engineering and development of new end-items prior to production approval decision and the upgrading and enhancement of existing MPTE decision support systems, tools and models. This non-acquisition category program provides funds for continued R&D for broader application of advanced technologies to transition successful research proof-of-concept demonstrations into operational use. This PE provides funding to support the transition of models and decision support tools from RDT&E funded to production and into the hands of analysts and program managers throughout the Manpower, Personnel, Training and Education enterprise. The PE also supports the application of proven industry models, tools and methodologies to Navy MPTE problems where GOTS solutions are non-existent. The second goal of the PE is to successfully implement 90% of the industry-standard tools that are attempted to be used in Navy applications. In this case the Naval War College procuring and modifying an integrated, state-of-the-art information management / knowledge-management (IM / KM) system that environment that supportsthe College's unique educational and research activities. Informed by IM/KM best practices, elements of this environment will enhance the NWC's ability to achieve objectives in its mission areas of education, research, cooperative / international engagement, and combat readiness. This effort will allow NWC to support the CJCS' vision for education as a career/lifelong learning endeavors, Navy's education strategy and CNO's Sailor 2025 initiative by dramatically increasing NWC communication of research, gaming and education results to the broader military and Navy communities. FY18 increase of $34.109 million is required to address emergency/emergent war fighting readiness requirements. Additional funds support the continuation of IT system modernization for personnel management. Upgrades will provide information infrastructure that will streamline data from disparate and dated databases to bring personnel management and learning together into a common operating picture and significantly reduce the number of legacy business systems down from 55. This integration and updated technology will enable Sailors to transmit decisions from a mobile environment and unlock data stores for leaders that will provide visibility to enable more effective and efficient management. ***FY 2016 Accomplishments:*** - Continue Training and Supply Chain Management Decision Support Systems integration and transition. - Start Community Management and Strength Planning Model Enhancements and Integration					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	**Project (Number/Name)** 1822 / *Manpower Pers & Human Fact System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue development of Training Capacity Tradeoff Model. - Continue enhancement of products delivered via World Class Modeling. - Start/Complete Enlisted Advancement Worksheet - Start Transition of STAMPS Manpower Planning Optimization Tool (MPOT) - Start NMRS Modernization under this PE. - Continue Funding of NMRS Modernization under PE 0605013N Proj 2905 - Small Business Innovative Research (SBIR). ***FY 2017 Plans:*** - Continue Training and Supply Chain Management Decision Support Systems integration and transition. - Continue Community Management and Strength Planning Model Enhancements and Integration - Continue Development of Training Capacity Tradeoff Model - Continue Enhancements of Products delivered via World Class Modeling - Continue Transition of STAMPS Manpower Planning Optimization Tool (MPOT) - Start development of Model Integration - Small Business Innovative Research (SBIR). 2017 AMENDED BUDGET REQUEST JUSTIFICATION: $14.000 million is required to address emergency warfighting readiness requirements. Additional funds support IT system modernization for personnel management. Upgrades will provide information infrastructure that will streamline data from disparate and dated databases to bring personnel management and learning together into a common operating picture. This technology will enable Sailors to transmit decisions from a mobile environment and unlock data stores for leaders that will provide visibility to enable more effective and efficient management: - Accelerated Development Support for Transformation PeopleSoft 9.2 Proof of Concept - Accelerated Development Support for Transformation Data and Analytics - Accelerated Development Support for Transformation Pilot - Accelerated Development Support for Transformation Platform as a Service System Integration ***FY 2018 Base Plans:*** - Continue Training and Supply Chain Management Decision Support Systems integration and transition.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	**Project (Number/Name)** 1822 / *Manpower Pers & Human Fact System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue Community Management and Strength Planning Model Enhancements and Integration - Continue Development of Training Capacity Tradeoff Model - Continue Enhancements of Products delivered via World Class Modeling - Continue Transition of STAMPS Manpower Planning Optimization Tool (MPOT) - Small Business Innovative Research (SBIR). - Continue of Model Integration (Model integration is the Transition Tail for the Manpower, Personnel and Training Strategic Planning Application Science and Technology initiative that begins is FY17 and ends in FY19. This S&T initiative will develop an modeling integration architecture enabling the MPTE Enterprise/domain to fully integrate their suite of models into a single environment. Products from the S&T initiative will be in spiral development and begin to be delivered at the end of FY17/beginning of FY18.) $34.109 increase to continue efforts from FY17 ABS add: - Continue Transformation PeopleSoft 9.2 Proof of Concept - Continue Transformation Data and Analytics - Continue Transformation Pilot - Continue Transformation Platform as a Service System Integration ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	7.408	18.995	40.828	0.000	40.828

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

This PE provides funding to support the transition of models and decision support tools from RDT&E funded research, Science and Technology (6.2-6.3), to production and into the hands of analysts and program managers throughout the Manpower, Personnel, Training and Education enterprise. The PE also supports the application of proven industry models, tools and methodologies to Navy MPTE problems where GOTS solutions are non-existent. One goal of this PE is to transition 90% of successful S&T products to production while distributing 80% of successful educational and research products from the Naval War College to a broader Navy audience

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	**Project (Number/Name)** 1822 / *Manpower Pers & Human Fact System*

to be used by USN Sailors and civilians. The second goal of the PE is to successfully implement 90% of the industry-standard tools that are attempted to be used in Navy applications and the existing NWC web based applications and products into the new IM/KM system for broader dissemination.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	Project (Number/Name) 1822 / *Manpower Pers & Human Fact System*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Allot	NPRST : Millington, TN	8.340	0.800	Jul 2016	0.000	Oct 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Development Support	Allot	CNP : Washington, DC	7.341	3.008	Jan 2016	1.595	Jan 2017	2.028	Jan 2018	-		2.028	Continuing	Continuing	Continuing
Development Support	Allot	NPC PMW-240 : Millington, TN	1.330	1.300	Jul 2016	0.000		0.000		-		0.000	0.000	2.630	-
Development Support	Allot	NAWC-TSD : Orlando, FL	1.300	0.000		1.900	Jan 2017	1.900	Jan 2018	-		1.900	Continuing	Continuing	Continuing
Development Support	Allot	SPAWAR : New Orleans, LA	0.000	2.300	Jul 2016	1.500	Jan 2017	1.800	Jan 2018	-		1.800	3.600	9.200	-
Development Support	Allot	NPC, HP Texas : Millington, TN	1.450	0.000		0.000		0.000		-		0.000	0.000	1.450	-
Development Support	Allot	CNRC PMW 240 : Millington, TN	3.700	0.000		0.000		0.000		-		0.000	0.000	3.700	-
Development Support	Allot	NWC : Newport, RI	0.692	0.000	Oct 2015	0.000		0.000		-		0.000	0.000	0.692	-
Development Support Transformation PS 9.2 Proof of Concept	Allot	TBD : TBD	0.000	0.000		4.000	Jul 2017	14.000	Jan 2018	-		14.000	Continuing	Continuing	Continuing
Development Support Transformation Data and Analytics	Allot	TBD : TBD	0.000	0.000		4.700	Sep 2017	5.000	Jan 2018	-		5.000	Continuing	Continuing	Continuing
Development Support Transformation Pilot Launch	Allot	TBD : TBD	0.000	0.000		3.950	Sep 2017	15.100	Jan 2018	-		15.100	Continuing	Continuing	Continuing
Development Support Transformation PaaS Integration	Allot	TBD : TBD	0.000	0.000		1.350	Jul 2017	1.000	Jan 2018	-		1.000	Continuing	Continuing	Continuing
		Subtotal	24.153	7.408		18.995		40.828		-		40.828	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	**Project (Number/Name)** 1822 / *Manpower Pers & Human Fact System*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Need Item Text	C/BA	Not Specified : Not Specified	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	24.153	7.408		18.995		40.828		-		40.828	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	**Project (Number/Name)** 1822 / *Manpower Pers & Human Fact System*

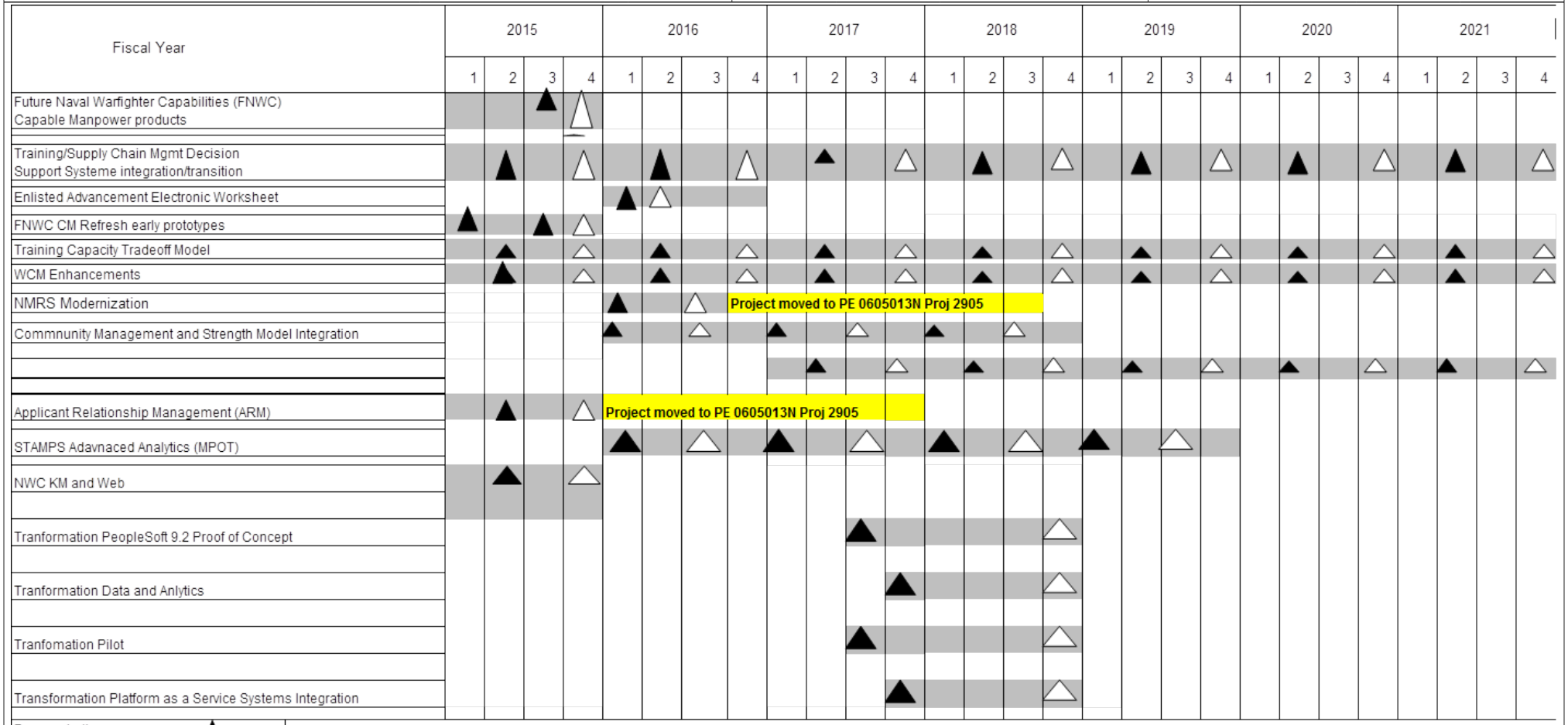


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	**Project (Number/Name)** 1822 / *Manpower Pers & Human Fact System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1822				
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: Training/Supply Chain Mgmt Decision Support Systems Integration/Transition	2	2016	4	2022
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/SCMDS 1	2	2016	2	2016
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/SCMDS 2	4	2016	4	2016
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/SCMDS 3	2	2016	2	2016
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/SCMDS 4	4	2016	4	2016
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/SCMDS 5	2	2016	2	2016
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/SCMDS 6	4	2016	4	2016
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/SCMDS 7	2	2017	2	2017
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/SCMDS 8	4	2017	4	2017
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/SCMDS 9	2	2018	2	2018
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/SCMDS I0	4	2018	4	2018
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/SCMDS I1	2	2019	2	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	**Project (Number/Name)** 1822 / *Manpower Pers & Human Fact System*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/ SCMDS I2	4	2019	4	2019
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/ SCMDS I3	2	2020	2	2020
Training/Supply Chain Mgmt Decision Support Systems Integration/Transition: T/ SCMDS I4	4	2020	4	2020
Training Capacity Tradeoff Model: Training Capacity Tradeoff Model	2	2016	4	2021
Training Capacity Tradeoff Model: TCTM 1	2	2016	2	2016
Training Capacity Tradeoff Model: TCTM 2	4	2016	4	2016
Training Capacity Tradeoff Model: TCTM 3	2	2016	2	2016
Training Capacity Tradeoff Model: TCTM 4	4	2016	4	2016
Training Capacity Tradeoff Model: TCTM 5	2	2016	2	2016
Training Capacity Tradeoff Model: TCTM 6	4	2016	4	2016
Training Capacity Tradeoff Model: TCTM 7	2	2017	2	2017
Training Capacity Tradeoff Model: TCTM 8	4	2017	4	2017
Training Capacity Tradeoff Model: TCTM 9	2	2018	2	2018
Training Capacity Tradeoff Model: TCTM 10	4	2018	4	2018
Training Capacity Tradeoff Model: TCTM 11	2	2019	2	2019
Training Capacity Tradeoff Model: TCTM 12	4	2019	4	2019
Training Capacity Tradeoff Model: TCTM 13	2	2020	2	2020
Training Capacity Tradeoff Model: TCTM 14	4	2020	4	2020
WCM Enhancements: WCM Enhancements	2	2016	4	2021
WCM Enhancements: WCM 1	2	2016	2	2016
WCM Enhancements: WCM 2	4	2016	4	2016
WCM Enhancements: WCM 3	2	2017	2	2017
WCM Enhancements: WCM 4	4	2017	4	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	**Project (Number/Name)** 1822 / *Manpower Pers & Human Fact System*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
WCM Enhancements: WCM 5	2	2018	2	2018
WCM Enhancements: WCM 6	4	2019	4	2019
WCM Enhancements: WCM 7	2	2016	2	2016
WCM Enhancements: WCM 8	4	2016	4	2016
WCM Enhancements: WCM 9	2	2017	2	2017
WCM Enhancements: WCM 10	4	2017	4	2017
WCM Enhancements: WCM 11	2	2018	2	2018
WCM Enhancements: WCM 12	4	2018	4	2018
WCM Enhancements: WCM 13	2	2019	2	2019
WCM Enhancements: WCM 14	4	2019	4	2019
NMRS Advanced Analytics: NMRS Advanced Analytics	1	2016	4	2019
NMRS Advanced Analytics: NMRS 3	1	2016	1	2016
NMRS Advanced Analytics: NMRS 4	4	2016	4	2016
NMRS Advanced Analytics: NMRS 5	1	2017	1	2017
NMRS Advanced Analytics: NMRS 6	4	2017	4	2017
NMRS Advanced Analytics: NMRS 7	1	2018	1	2018
NMRS Advanced Analytics: NMRS 8	4	2018	4	2018
NMRS Advanced Analytics: NMRS 9	1	2019	1	2019
NMRS Advanced Analytics: NMRS 10	4	2019	4	2019
Enlisted Advancement Electronic Worksheet: EAEW 1	1	2016	2	2016
STAMPS Advanced Analytics (MPOT): STAMPS	1	2016	3	2018
MPT&E Transformation My Navy Portal (MNP): MPT&E Transformation My Navy Portal (MNP)	1	2017	1	2021
MPT&E Transformation My Navy Portal (MNP): Transformation PeopleSoft 9.2 Proof of Concept	3	2017	3	2017
MPT&E Transformation My Navy Portal (MNP): Transformation Data and Analytics	4	2017	4	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604703N / *Personnel, Trng, Sim, & Human Factors*	**Project (Number/Name)** 1822 / *Manpower Pers & Human Fact System*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MPT&E Transformation My Navy Portal (MNP): Transformation Pilot	3	2017	3	2017
MPT&E Transformation My Navy Portal (MNP): Transformation Platform as a Service Proof of Concept Systems Integration	4	2017	4	2017

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604727N *I Joint Standoff Weapon Systems*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	897.931	0.394	0.412	0.435	-	0.435	0.445	0.453	0.462	0.471	3.005	904.008
2068: *Joint Standoff Weapon (JSOW)*	897.931	0.394	0.412	0.435	-	0.435	0.445	0.453	0.462	0.471	3.005	904.008
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 766												

A. Mission Description and Budget Item Justification

The Joint Standoff Weapon (JSOW) is an air-to-ground weapon designed to attack a variety of targets during day, night, and adverse weather conditions. JSOW will enhance aircraft survivability as compared to current interdiction weapon systems by providing the capability for launch aircraft to standoff outside the range of most target area surface-to-air threat systems. The JSOW launch-and-leave capability will allow several target kills per aircraft sortie. The JSOW program first developed a baseline weapon for use against fixed area targets. JSOW is a Navy led joint Navy/Air Force program. JSOW utilizes a "common truck" for both AGM-154A and AGM-154C variants. Through adherence to international standards for weapons interfaces, weight, and dimension considerations, JSOW is compatible with Air Force and North Atlantic Treaty Organization aircraft.

The JSOW Baseline (AGM-154A) variant includes a kinematically efficient airframe, an integrated Inertial/Global Positioning System navigation capability, and a BLU-97/B payload. This weapon was designed up front for pre-planned product improvements. The JSOW BLU-108 (AGM-154B) variant incorporates the sensor fuze weapon submunition (BLU-108) into the baseline vehicle. The JSOW Unitary (AGM-154C) variant has a terminal seeker, autonomous target acquisition capability, and a broach lethal package to enable the attack of blast/fragmentation and penetration type targets. The JSOW Unitary provides increased accuracy and lethality and the capability for aimpoint selection. Operational Testing of the JSOW-C was successfully completed in December 2004. Approval for Milestone-III/Full Rate Production was granted on 20 December 2004. JSOW-C Initial Operational Capability was achieved in February 2005.

The JSOW Unitary (AGM-154C-1) variant includes a Network Enabled Weapon moving maritime target capability. The AGM-154C-1 capability enables the weapon to be integrated with the network and attack sea moving maritime targets via real-time pre-and post-launch targeting updates. JSOW will continue to conduct analysis and development of solutions to system integration challenges, and continual enhancement of warfighter effectiveness in the employment of the JSOW weapon system. JSOW funding will provide enhancements to include the analysis of extended range and future improvements to the JSOW-C configuration to improve capability. The FY 2018 funding includes the integration of new functionality into the joint mission planning systems and precision guided munitions planning system. JSOW C-1 Initial Operational Capability was achieved in June 2016.

This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604727N *I Joint Standoff Weapon Systems*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.405	0.412	0.433	-	0.433
Current President's Budget	0.394	0.412	0.435	-	0.435
Total Adjustments	-0.011	0.000	0.002	-	0.002
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.011	0.000			
• Program Adjustments	0.000	0.000	-0.001	-	-0.001
• Rate/Misc Adjustments	0.000	0.000	0.003	-	0.003

Change Summary Explanation

Schedule:

OT final report moved from 4QFY 2016 to 3QFY 2017 to reflect test report completion delays.

Production shutdown activities start date moved from 1QFY 2017 to 4QFY 2017 to reflect additional time required to assess production shutdown requirements.

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604727N / *Joint Standoff Weapon Systems*	Project (Number/Name) 2068 / *Joint Standoff Weapon (JSOW)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2068: *Joint Standoff Weapon (JSOW)*	897.931	0.394	0.412	0.435	-	0.435	0.445	0.453	0.462	0.471	3.005	904.008
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 766

A. Mission Description and Budget Item Justification

Provides funds for the development of a weapon to be employed by aircraft to attack targets during day, night, and adverse weather conditions. The JSOW design will capitalize on aircraft sensor capabilities and minimize individual weapon sophistication, reducing unit cost and provides a significant increase in strike warfare capability. Excludes civilian and military manpower and their related costs and military construction costs which are included in appropriate management and support elements in this program.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Network Enabled Weapon (NEW)	0.093	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Develop and integrate the NEW moving maritime target capability into JSOW-C, termed AGM-154C-1. ***FY 2016 Accomplishments:*** Continued support for software integration associated with future obsolescence, software improvements, and regression testing on NEW moving maritime target capability. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: JSOW Mission Planning Systems	0.301	0.412	0.435	0.000	0.435
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604727N / *Joint Standoff Weapon Systems*	**Project (Number/Name)** 2068 / *Joint Standoff Weapon (JSOW)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Incorporates mission planning into the JSOW and develops new software releases. Address new mission planning functionality related to the incorporation of the NEW moving target capability into the JSOW-C-1 weapons. ***FY 2016 Accomplishments:*** Continue interoperability efforts for JSOW C-1. ***FY 2017 Plans:*** Continue interoperability efforts for JSOW C-1. ***FY 2018 Base Plans:*** Continue interoperability efforts for JSOW C-1. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.394	0.412	0.435	0.000	0.435

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• USN WP,N BLI 223000: *JSOW*	12.919	2.232	5.487	-	5.487	1.227	0.000	0.000	0.000	0.000	2,276.475

Remarks

FY18-19 funding is required for Telemetry Instrumentation Kit (TIK) efforts.

D. Acquisition Strategy

The contracting strategy for JSOW is planned to be sole source for the life of the program. Cost type contracts are utilized for the Engineering and Manufacturing Development and follow-on modification program (i.e., Block II (AGM-154C), AGM-154C-1) efforts. Component breakout is used, when possible, to promote full and open competition.

Fixed price type contracts are utilized for production.

E. Performance Metrics

The JSOW C-1 program is meeting the cost, schedule, performance, funding and life cycle sustainment in accordance with the Acquisition Program Baseline.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604727N / *Joint Standoff Weapon Systems*	**Project (Number/Name)** 2068 / *Joint Standoff Weapon (JSOW)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering	MIPR	National Security Agency : Fort Meade, MD	1.166	0.093	Apr 2016	0.000		0.000		-		0.000	0.000	1.259	-
Prior year Prod Dev no longer funded in the FYDP	Various	Various : Various	802.617	0.000		0.000		0.000		-		0.000	0.000	802.617	-
		Subtotal	803.783	0.093		0.000		0.000		-		0.000	0.000	803.876	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	SS/CPFF	Various : Various	5.717	0.301	May 2016	0.412	Apr 2017	0.435	Feb 2018	-		0.435	4.823	11.688	11.688
Prior year Support no longer funded in the FYDP	Various	Various : Various	8.007	0.000		0.000		0.000		-		0.000	0.000	8.007	-
		Subtotal	13.724	0.301		0.412		0.435		-		0.435	4.823	19.695	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Oper Test and Evaluation	WR	COMOPTEVFOR : Norfolk, VA	20.886	0.000		0.000		0.000		-		0.000	0.000	20.886	-
Prior year T&E no longer funded in the FYDP	WR	NAWCWD : China Lake, CA	34.034	0.000		0.000		0.000		-		0.000	0.000	34.034	-
		Subtotal	54.920	0.000		0.000		0.000		-		0.000	0.000	54.920	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604727N / *Joint Standoff Weapon Systems*	**Project (Number/Name)** 2068 / *Joint Standoff Weapon (JSOW)*

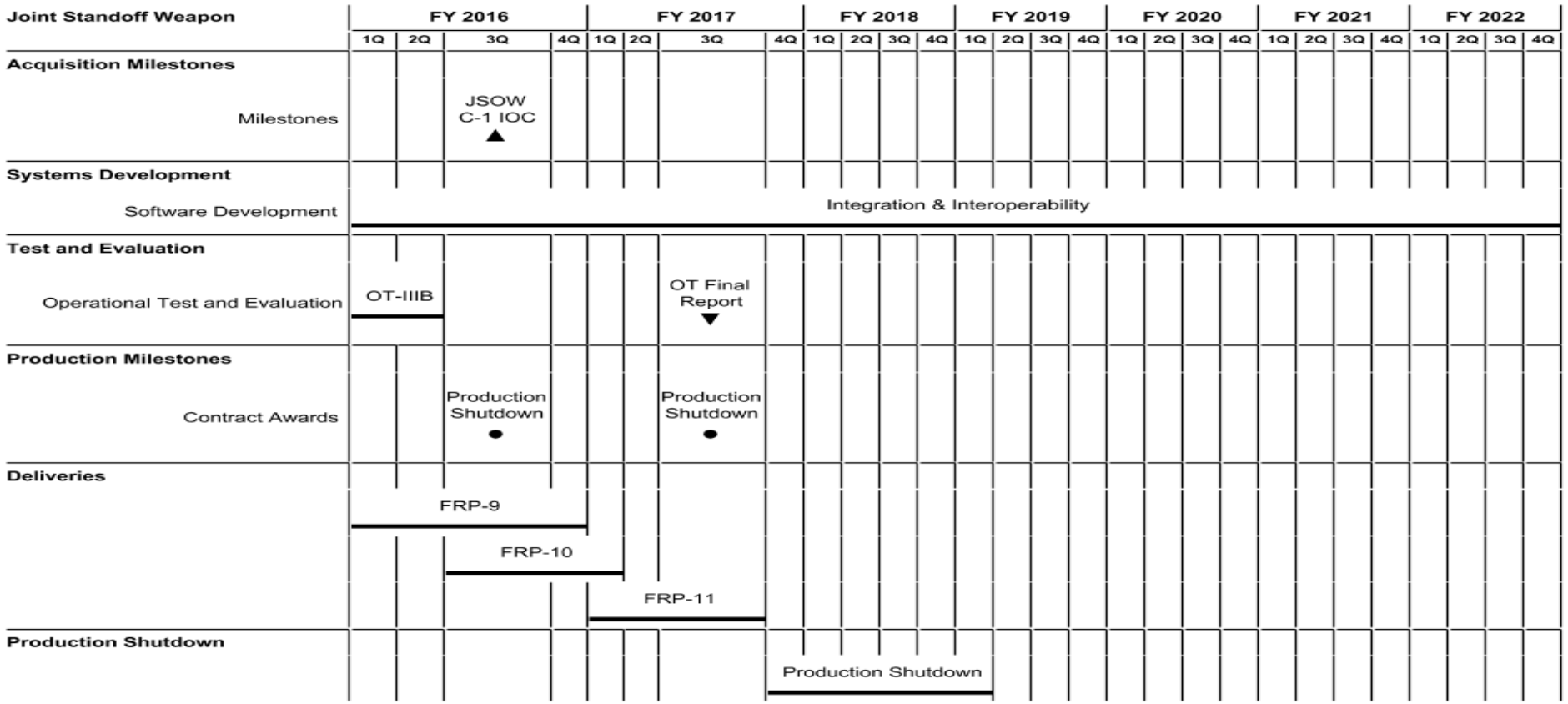
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior year Mgmt no longer funded in the FYDP	Various	Various : Various	25.504	0.000		0.000		0.000		-		0.000	0.000	25.504	-
		Subtotal	25.504	0.000		0.000		0.000		-		0.000	0.000	25.504	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	897.931	0.394		0.412		0.435		-		0.435	4.823	903.995	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604727N / *Joint Standoff Weapon Systems*	**Project (Number/Name)** 2068 / *Joint Standoff Weapon (JSOW)*



2018OSD - 0604727N - 2068 OT Final Report refers to AGM-154C-1 Operational Test Agency Follow On Evaluation OT-IIIB Final Report

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604727N / *Joint Standoff Weapon Systems*	**Project (Number/Name)** 2068 / *Joint Standoff Weapon (JSOW)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Joint Standoff Weapon				
Acquisition Milestones: Milestones: Initial Operational Capability C-1	3	2016	3	2016
Systems Development: Software Development: Integration and Interoperability	1	2016	4	2022
Test and Evaluation: Operational Test and Evaluation: Network Enabled Weapon/ Moving Target/AGM-154C-1 Operational Test (OT-IIIB)	1	2016	2	2016
Test and Evaluation: Operational Test and Evaluation: AGM-154C-1 JSOW Operational Test Agency Follow-On Evaluation Report OT-IIIB Final Report	3	2017	3	2017
Production Milestones: Contract Awards: Production Shutdown Awards Phase 1 Raytheon	3	2016	3	2016
Production Milestones: Contract Awards: Production Shutdown Awards Phase 2 Raytheon	3	2017	3	2017
Deliveries: FRP-9 Deliveries- AGM-154C-1	1	2016	4	2016
Deliveries: FRP-10 Deliveries- AGM-154C-1	3	2016	1	2017
Deliveries: FRP-11 Deliveries- AGM-154C-1	1	2017	3	2017
Production Shutdown: Production Shutdown	4	2017	1	2019

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604755N *I Ship Self Def (Detect & Cntrl)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	959.065	145.229	134.619	161.713	-	161.713	135.374	123.426	109.865	122.736	Continuing	Continuing
2178: *QRCC*	921.590	133.299	127.578	148.982	-	148.982	124.911	112.872	97.876	110.506	Continuing	Continuing
3172: *Joint Non-Lethal Weapons*	35.621	4.806	4.177	5.177	-	5.177	2.990	3.056	3.122	3.185	Continuing	Continuing
3358: *SSDS Training Improvement Program*	1.854	7.124	2.864	7.554	-	7.554	7.473	7.498	8.867	9.045	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element consolidates efforts related to the integrated control of Ship Self Defense (SSD) and multi-warfare Combat Direction for Aircraft Carriers and Amphibious Class ships. Analysis and demonstration have established that surface SSD based on single-sensor detection point-to-point control architecture is inadequate against current and projected Anti-Ship Cruise Missile (ASCM) threats. The supersonic sea-skimming ASCM reduces the effective battle space to the horizon and the available reaction time-line to less than 30 seconds from first opportunity to detect until the ASCM impacts its target ship. Against such a threat, multi-sensor integration is required for effective detection, and parallel processing is essential to reduce reaction time to acceptable levels and to provide vital coordination/ integration of hard-kill and soft-kill assets. The program element also includes integrated Combat System embedded shipboard training, and Non-Lethal weapons in support of anti-terrorism/force protection missions.

Quick Reaction Combat Capability (QRCC, PU2178): This project provides for the evolutionary acquisition of the Ship Self Defense System (SSDS), the core combat system control element for the Quick Reaction Combat Capability (QRCC) in aircraft carriers and amphibious class ships. In addition, the project provides for Combat System Integration (CSI) with the central system engineering and software for the integration of advanced sensor, weapon and C4I upgrades, and for the test and evaluation and certification of the integrated Combat System (CS).

SSDS MK 2 integrates a diverse set of fire control loop sensors and weapons, and C4I systems for each ship class (CVN68/78, LHA6, LHD1, LPD17, and LSD41/49). SSDS MK2 provides the capabilities for integrated air and missile defense, multi-warfare situational awareness and combat direction, and joint interoperability via the Cooperative Engagement Capability (CEC) and Tactical Digital Information Link (TDL)-J. SSDS MK2 is being fielded with the new construction carriers (CVN78 class) and amphibious ships (LHA6, LPD17 classes). SSDS MK2 is replacing the Advanced Combat Direction System (ACDS) in the LHD1 class and SSDS MK1 in the LSD 41/49 class as fleet modernization initiatives. In addition, with the decision to replace the Dual Band Radar (DBR) for CVN 79/80 and Amphibious Class Ships (LHA 8) with an Enterprise Radar Suite (ERS), consisting of a new radar (Enterprise Air Search Radar (EASR), and an X-Band Illuminator, SSDS will require development of system and software changes for ERS Combat System Integration.

In order to meet the Navy's war fighting capabilities and modernization concepts described in SEA POWER 21, Navy Open Architecture (OA) is being introduced in conjunction with SSDS Commercial off the Shelf (COTS) Technology Refresh initiatives. This is the first step in unifying a set of war fighting functions into a common architecture shared among many ship classes. This principle of commonality is a major mechanism for cost control and avoidances in the Navy's future war fighting systems. Starting in 2008, SSDS MK 2 re-hosted existing tactical computer program applications into the Open Architecture Computing Environment (OACE)

specifications with equipment suites concurrent with COTS Technology Insertion (TI) cycles, prior to migration and integration with other Navy OA applications for implementation on future new construction ships or during future ship modernization.

SSDS MK2 implements new combat system war-fighting capabilities and improvements on phased basis via Advanced Capability Builds (ACB) and Technology Insertion (TI). PU 2178 efforts are divided into three major functional areas: SSDS Product Development, Combat Systems Integration, and Test and Evaluation/ Certification.

The SSDS Product Development under PU 2178 encompasses technology insertion and cyber-security, including the development and integration of ACB-12 with an Open Architecture Computing Environment (OACE), product line System Track Manager, and phased technology insertion configurations. CVN78 is the lead ship for ACB-12. For the CVN 78,
FY 17-FY18 requires collaborative Combat System efforts to support CSSQT and DT/OT/OPEVAL and achieve requisite deployment capabilities for Ship Self Defense and Strike Group interoperability through extensive, Integrated Combat System (ICS) testing and software updates.

For Cyber-Security, TFCA BDC initiative under PU 2178 will provide SSDS MK2 and Combat Systems-level cyber-security protection based on system of systems risk assessment. TFCA BDC is a phased multi-year development to define, develop, and integrate enterprise Combat System cyber-security solutions. These solutions will provide a set of boundary defense capabilities for the SSDS MK2 ICS, a set of centralized Combat Systems-level cyber-security capabilities, and a set of element-level cyber-security protections.

Combat System Integration under PU 2178 encompasses CS modeling and simulation, system analysis/engineering, and system/software development for integration of sensors, weapons and C4I systems with SSDS MK2 in the CVN and Amphibious Class Ships for integrated air and missile defense, ship self-defense, multi-warfare combat direction and strike group interoperability. Combat System Integration includes Fire Control Loop Improvement Project (FCLIP), Far-Term Interoperability Improvement Project (FTIIP), and ACB-20 war-fighting improvements, including the integration of EASR/ERS.

PU 2178 also includes the SSDS MK 2 Developmental Test/Operational Test (DT/OT) efforts and Combat System certification efforts.

Non-Lethal Weapons (PU 3172) - This project provides a long range laser warning and dazzle system, maritime vessel stopper system, and combined effects (light, laser, and sound) system for use in the maritime environment. Optical warning and distraction has been identified by the services as a possible technology solution to mitigate and/or address several known joint non-lethal capability gaps.

SSDS Training Improvement Program (PU 3358) - The SSDS Training Improvement project will provide enhancements and upgrades to the Total Ship Training Capability (TSTC) training components within the combat system to address needs for increased training capability and functionality in conjunction with SSDS MK2 Advanced Capability Builds (ACB)/Fire Control Loop Improvement Project (FCLIP)/ Far-Term Interoperability Improvement Project (FTIIP)/Task Force Cyber Awakening (TFCA) Boundary Defense Capability (BDC) Project and Technical Insertion efforts under PU 2178 (QRCC). These enhancements will address current and future training requirements by implementing new functionality to enable the individual warfighter to engage in more complex training requirements and distributed battle group events to support fleet required training certification events. Capability development and integration are related to Integrated Air and Missile Defense, Underwater,

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604755N *I Ship Self Def (Detect & Cntrl)*

Surface, and other warfare areas. Capability enhancements and upgrades include development of re-useable common components that can be leveraged by AEGIS combat systems, and/or integration of re-usable common components developed by the TSTC Battle Force Tactical Training (BFTT) Program (PE 0204571/PU1427) and AEGIS TSTC Training Improvement program (PE 0604307/PU 3357), and integration with the SSDS MK2 TI-12/TI-16/TI-22 configurations, to meet Aircraft Carrier and Amphibious Class ship SSDS integrated combat system embedded training requirements.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	145.336	134.619	161.639	-	161.639
Current President's Budget	145.229	134.619	161.713	-	161.713
Total Adjustments	-0.107	0.000	0.074	-	0.074
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	4.050	0.000			
• SBIR/STTR Transfer	-4.157	0.000			
• Program Adjustments	0.000	0.000	-0.047	-	-0.047
• Rate/Misc Adjustments	0.000	0.000	0.121	-	0.121

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2178: *QRCC*	921.590	133.299	127.578	148.982	-	148.982	124.911	112.872	97.876	110.506	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The QRCC project (PU 2178) implements an evolutionary acquisition of improved ship self-defense capabilities against Anti-Ship Cruise Missiles (ASCMs), and improved multi-warfare capabilities, for Aircraft carriers and Amphibious Class ships. The SSDS is the integrating element of QRCC. The design integrates CS elements that do not individually provide the complete detection, control, and engagement capabilities needed against low flying, high speed ASCMs with low radar cross sections. The SSDS integration concept fulfills the need for an automated detection, quick reaction and multi-target engagement capability, emphasizing performance in the littoral environment. System design emphasizes use of non-developmental items, commercial standards, commercial processors, computer program reuse and open system architecture. SSDS is a physically distributed, open system architecture computer network consisting of commercially available or previously developed hardware. It includes the Navy's standard computers (Common Processor System) and displays (AN/UYQ-70 and Common Display System) and command table for human system interface, commercially based network switching and interface units, and commercially available fiber optic cabling.

SSDS MK1, the first generation of SSDS, integrates the SPS-49A(V)1 radar, SPS-67(V)1 radar, AN/SLQ-32A/B electronic warfare system, Combat Identification Friend or Foe-Self Defense (CIFF-SD), Rolling Airframe Missile (RAM) and Phalanx Close-In Weapon System (CIWS) and is installed on LSD41/49 class ships. SSDS MK1 successfully completed Operational Evaluation in June 1997. SSDS received Milestone III Approval for Full Rate Production (Mar 98) and authority to integrate with ACDS and Cooperative Engagement Capability (CEC) on CVN, LPD-17, LHD and LHA ship classes (as SSDS MK 2).
SSDS MK2 integrates other CS elements, such as AN/SPQ-9B radar, NATO Sea-sparrow system, CEC and TDL for joint interoperability. SSDS MK2 provides enhanced capabilities for Self-Defense against air and surface threats using both own-ship and remote data to address AAW Capstone requirements. SSDS MK2 is the integrated, coherent real time Command and Control System for Aircraft Carriers and Amphibious Class ships.

SSDS MK 2 integrates a diverse set of fire control loop sensors and weapons, and C4I systems for each ship class (CVN68/78, LHA6, LHD1, LPD17, and LSD41/49). SSDS MK2 provides the capabilities for integrated air and missile defense, multi-warfare situational awareness and combat direction, and joint interoperability via the Cooperative Engagement Capability (CEC) and TDL-J. SSDS MK2 is being fielded with the new construction carriers (CVN78 class) and amphibious ships (LHA6, LPD17 classes). SSDS MK2 is replacing the Advanced Combat Direction System (ACDS) in the LHD1 class and SSDS MK1 in the LSD 41/49 class as fleet modernization initiatives. In addition, with the decision to replace the Dual Band Radar (DBR) for CVN 79/80 and L-Class Ships (LHA 8) with an Enterprise Radar Suite (ERS), consisting of a new radar (Enterprise Air Search Radar (EASR), and an X-Band Illuminator, SSDS will require development of system and software changes for ERS Combat System Integration. The overall scope of the multi-year development for EASR/ERS integration will include systems engineering/analysis, M&S, hardware and software development, cyber-security implementation, Factory System Integration Test (FSIT) and Wrap Around Simulation, and Wallops Island integration and engineering Test for Fire Control Loop Elements.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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SSDS MK2 implements new combat system war-fighting capabilities and improvements on phased basis via Advanced Capability Builds (ACB) and Technology Insertion (TI). PU 2178 efforts are divided into three major functional areas: SSDS Product Development, Combat Systems Integration, and Test and Evaluation/ Certification.

The SSDS Product Development encompasses technology insertion and cyber-security, including the development and integration of ACB -12 with an Open Architecture Computing Environment (OACE), product line System Track Manager, and multiple technology insertion configurations. CVN78 is the lead ship for ACB-12. SSDS Product Improvement includes system engineering, critical experiments, software development, hardware development, operating environment, cyber-security software, hardware/software integration, factory qualification testing, land-based engineering testing, system/software test analyze and fix (TAAF) effort in support of CS testing (CS integration, engineering, certification and at-sea testing), logistics products and ashore training course development.

New hardware TI baselines are required every four years to refresh the Commercial-Off-The-Shelf (COTS) assemblies to sustain system production and to support the incorporation of new capabilities. Each individual ship is planned for a TI upgrade on an eight to ten-year interval to replace obsolescent COTS hardware and support the fielding of the war-fighting capabilities and improvements.

Due to prior year budget constraints, the TI-16 hardware development and associated ACB-12 software migration have been delayed. In order to support critical Ship Combat System modernization installation schedules, production of the TI-12 configuration has been extended for SSDS with technology refresh of obsolescent (designated TI-12H). The FY17 plans has been adjusted to support the migration to the TI-12H configuration in addition to the migration to the TI-16 configuration with the new lead ships identified. The TI-12H and TI-16 software migrations will be completed in FY18.

FY16-FY18 SSDS Product Development includes the integration and test of the ACB-12/TI-12 baseline for the CVN 78, CVN 72 and LHD2, and transition to the TI-12Hybrid (TI-12H) baseline for follow on ships with replacement assemblies for unprocurable TI-12 COTS assemblies. FY16-18 also includes completion of the TI-16 hardware development and qualification, and migration of the SSDS MK 2 ACB-12 software to the TI-16 configuration. FY17-FY18 includes the initiation of the system engineering analysis and hardware engineering for the next TI configurations, TI-16 Tech Refresh and TI-22, to define the architecture for the SSDS MK2 CS ship class variants, and the hardware requirements for common infrastructure for computing, display and, network and cyber-security.

For Cyber-Security, TFCA BDC initiative under PU 2178 will provide SSDS MK2 and Combat Systems-level cyber-security protection based on system of systems risk assessment. TFCA BDC is a phased multi-year development to define, develop, and integrate enterprise Combat System cyber-security solutions. These solutions will provide a set of boundary defense capabilities for the SSDS MK2 ICS, a set of centralized Combat Systems-level cyber-security capabilities, and a set of element-level cyber-security protections. The boundary defense capabilities will protect and detect threats entering and leaving the Combat System. The centralized Combat System-level cyber-security capabilities will provide cyber situational awareness and management of various (e.g. malware detection, file integrity verification, etc.) cyber-security protection and detection capabilities. Element-level cyber-security protections will provide additional measures to ensure system integrity. Development of enterprise Combat System risk management processes will occur, to include a system of systems risk assessment methodology to support Combat System execution of the Risk Management Framework.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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Combat System Integration under PU 2178 encompasses CS modeling and simulation, system analysis/engineering, and system/software development for integration of sensors, weapons and C4I systems with SSDS MK2 in CVN and Amphibious Class Ships for integrated air and missile defense, ship self-defense, multi-warfare combat direction and strike group interoperability. Combat System Integration includes Fire Control Loop Improvement Project (FCLIP), Far-Term Interoperability Improvement Project (FTIIP), and ACB-20 war-fighting improvements, including the integration of EASR/ERS.

FCLIP is planned as a phased corrective action plan for system-of-systems deficiencies in SSDS MK2 ships, identified during live-fire testing with stressing anti-ship missile targets.

FCLIP Phase 2 is a phased multi-year development effort (FY16-FY19) that includes: CIWS integration with CEC/SSDS MK2, ESSM 2T Uplink, RAM Block2 Multi-Target processing in the missile, SoS integration of RAM Block 2 Multi-Target Processing, NSSMS MK9 Multi-Target Discrimination & Reporting, and modeling and analysis to ensure optimization and alignment of capabilities into the CS end-to-end fire control loop. CEC/SSDS MK2 Engage on Remote capability will be analyzed to determine performance improvements for potential implementation as part of FCLIP Phase 2. The overall scope of the multi-year development effort will include systems engineering/analysis, M&S, hardware and software development, cyber-security implementation, Factory Systems Integration Test (FSIT) with Wrap Around Simulation, and Wallops Island System integration and engineering testing for Fire Control Loop Elements.

FTIIP is the second phase of the corrective action plan for the resolution of the strike group interoperability issues. FTIIP includes implementation of Tactical Data Link (TDL) IFF Mode 5 identification capabilities, F/A-18 Digital Air Control (Phase 1) in support of F/A-18 and F-35 Joint Strike Fighter initial deployment, integration of the Shipboard Gridlock System/Automatic Correlation (SGS/AC) system into the SSDS MK2 TI-16 configuration, and implementation of other high priority software.

In FY09, system development was initiated for SSDS MK1 technology refresh for the LSD 41/49 class ships. The effort will transition these ships to an SSDS MK OACE and SSDS MK 2 single source library. The new system designation is SSDS MK2 Mod 5C. The system development effort encompasses TI of new OA computing and display equipment (Common Processor System (CPS) and Common Display System (CDS)), modifications and additions to the SSDS MK 2 software for an upgraded interface with the Phalanx Closed-In-Weapon System (CIWS) Block 1B Baseline 2 and Battle Force Tactical Trainer (BFTT), and other unique LSD SSDS interfaces and functionality. The first LSD SSDS MK 2 Mod 5C was installed in LSD-50 in FY14 after land-based Combat System Integration and Certification Testing with an IOC in FY16.

In FY10, SSDS MK 2 system development commenced for the first phase of migration to the Navy OA objective functional architecture designated as SSDS MK 2 ACB-12/TI-12. For the CVN78, the lead ship for ACB-12/TI-12, the baseline encompasses: implementation of common product line software components for System Track Management; integration of the product line System Track Management components and associated data model with other SSDS software components; integration of CPS and CDS; and expansion of SSDS MK 2 Local Area Network (LAN) to Combat System LAN; integration of new CS Combat System/C4I elements (Dual Band Radar(DBR), ESSM Block 1 with JUWL, SLQ-(V)6 SEWIP Block 2, MH-60R and CANES); implementation of cyber-security boundary defense capabilities and Total Ship Training Capability (TSTC). ACB-12/TI-12 is planned for fielding in the CVN 78, CVN 72 and LHD 2 in FY17. For the CVN 78, FY17-FY18 requires collaborative Combat System efforts to support DT/OT/OPEVAL and achieve requisite deployment capabilities for Ship Self Defense and Strike Group interoperability through extensive, Integrated Combat System (ICS) testing and software updates.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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Funds were added in FY13 for the integration and test of SSDS MK2 Tactical Data Link (TDL) 16 interoperability improvements to address critical Strike Group interoperability issues under the AEGIS Wholeness Initiative, designated AMIIP. In FY13, software defect corrections were implemented as Phase 1 of the Fire Control Loop Improvement Project (FCLIP) to correct specific anti-ship missile defense deficiencies identified during live-fire testing. In FY16, FCLIP Phase 2 and FTIIP were initiated as follow on efforts for fire control loop and strike group interoperability improvements.

In PB15, SSDS MK 2 Advance Capability Build (ACB)-16 was delayed 2 years due to the need to prioritize critical SSDS system improvements. ACB-16 was the designation for the next major SSDS baseline for the integration of new sensor, weapon, and C4I capabilities for anti-ship missile defense and strike group interoperability. As a result of the delay, ACB-16 has been re-designated to ACB-20. The SSDS MK 2 ACB-12 capability baseline development, test, and fielding will continue as planned. However, with the delay in development and fielding of ACB-16, an increased number of SSDS MK2 ships will receive the ACB-12 capability baseline and specific fire control loop, interoperability and cyber-security improvements, in lieu of ACB-16.

In addition to the integration of the Enterprise Radar Suite (EASR and X-Band TI), SSDS MK2/CS cyber-security enhancements, and integration of TSTC enhancements for ACB-20, ACB-20 SSDS MK 2 Combat System Integration development includes fire control loop improvements beyond FCLIP Phase 2 for tracking, weapon scheduling and engagement control with ESSM Block 2 missile; SEWIP Block 2 soft kill coordinator, SEWIP Block 3 Electronic Attack, and SEWIP Block 2/3 integration with SSDS MK2 TI-16 configuration.

SSDS MK2 Development Test and Evaluation (DT&E) provides for comprehensive testing of the integrated CS for the CVN 68, CVN 78, LPD 17, LHD1, LHA 6 and LSD41/49 ship classes. This includes Land-Based testing at Wallops Island and At-Sea testing for the lead ships for the new CS configurations, and Live Fire testing on the SDTS. The DT&E encompasses test planning, preparation, test conduct, data collection and analysis, and resolution and verification of deficiency corrections. The SSDS MK 2 T&E/Certification supports Integrated Combat System certification, the SSDS Test and Evaluation Master Plan (TEMP) and the Air Warfare Ship Self Defense CAPSTONE Enterprise TEMP.
The initial DT&E and Follow on Operational Test and Evaluation (FOT&E) for SSDS MK 2 was conducted with the CVN 76 SSDS MK 2 Mod 1 configuration in FY05. In FY07, the SSDS MK 2 FOT&E requirements were linked with the Air Warfare Ship Self Defense Enterprise T&E initiative to combine At-Sea Combat System element DT&E and OT&E requirements to synergize the resources required for testing in the SSDS MK 2 ships and the SDTS. The LPD-17 class SSDS MK 2 Mod 2 FOT&E was conducted in FY07/FY08 as part of the Enterprise T&E initiative. Live fire, Combat System end-to-end testing was conducted against Anti-Ship Cruise Missile (ASCM) targets on the SDTS in FY07/08/09 with the CVN/LHD/LPD configurations. FOT&E of ESSM integration with SSDS MK 2 was initiated on the CVN 68 class in FY08 and extended through FY16. FOT&E for the CVN class SSDS MK 2 Mod 1B OACE COTS TI was conducted in FY09. FY16/FY17 FOT&E includes the LHA 6 SSDS MK 2 Mod 4B configuration with the RAM Block 2 missile, ESSM, AMIIP and FCLIP. FY16-FY18 FOT&E includes the LSD SSDS MK 2 Mod 5C configuration with the Phalanx CIWS 1B Baseline 2 system and RAM Block2. FY16-FY19 DT/ FOT&E includes CVN 78 SSDS MK 2 Mod 6C configuration with the DBR, SEWIP Block 2 ES, ESSM Block 1 with JUWL up-link, and RAM Block 2.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: SSDS MK2 Product Development/Combat Systems Integration	108.034	100.638	121.503	0.000	121.503
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: The FY2016 plans included a major increase in scope for the SSDS MK2 product development efforts identified below to meet ship new construction and modernization schedules. For LSD SSDS MK2 Mod 5C configuration with the Phalanx CIWS Block 1B Baseline 2, RAM Block 2 and CPS/ CDS; -Provided TAAF support for CST for LSD 49 and LSD 51 TI-12 configurations with software Build 9. This included test data analysis and system/software trouble report resolution. For CVN78 SSDS MK2 Mod 6C. - Continued SSDS MK2 software design, code, test, and integration for software delivery to the ship for CS testing. - Conducted FSIT and FQT for this baseline. - Support for ICS Land-Based integration and engineering tests at WI, and for system / software trouble report resolution. - Continued development of operator and maintenance training courses for SSDS MK 2 Mod 6C ACB-12/TI-12 For CVN72 SSDS MK2 Mod 1C ACB-12/TI-12 configuration with SPS-48G, SPS-49A, SPQ-9B, CEC, PL STM, UPX-29, ESSM, NSSMS MK57 MOD13, RAM Block2, SLQ-32(v)4, NULKA, CV-TSC (with MH-60R link) and BFTT - Provided support for ICS Land Based integration and engineering tests at WI, and CSA for the RCOH Combat System Light-off (CSLO) software. This included test data analysis and system/software trouble report resolution For LHD 2 SSDS MK2 Mod 3C ACB12 / TI12 - Provided support for ICS Land Based integration and engineering test at WI, and for CSA for the CSLO. This included test data analysis and system / software trouble report resolution For LHD6/CVN73 SSDS MK2 MOD 3C/1E ACB-12/TI-12H/TI-16: -Continued the development of the SSDS MK2 TI-16 equipment and TI-12H COTS obsolescence changes to support equipment production, and initiate SSDS ACB-12 software re-host to the TI-16 and TI-12H configurations; continued the development of the equipment software operating environment, and conducted SRR, SFR, and design reviews for the re-host of the SSDS MK2 ACB-12 software. For FCLIP Phase 2					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Defined and allocated System of Systems (SoS) CS functional requirements for FCLIP Phase 2 and initiated system and software requirements for SSDS (and ICS elements) for capabilities for CIWS integration with CEC / SSDS MK2, ESSM 2T Uplink, and RAM Block 2 Multi-Target processing in the missile. Accomplished modeling and analysis to ensure optimization and alignment of capabilities into the ICS end-to-end fire control loop. Conduct studies and analysis to define capability phasing, concepts of integration and Combat System functional requirements / allocation for SoS integration of RAM Block2 Multi-Target processing, NSSMS MK9 Multi-Target Discrimination Reporting. For FTIIP, defined and allocated Combat System functional requirements and initiated system and software requirements specifications for SSDS (and ICS elements) for TDL capabilities for IFF Mode 5 and F/A-18 Digital Air Control (Phase) in support of F/A-18 and F-35 initial deployment, and conducted studies for the integration of SGS/AC into the SSDS MK2 TI-16 configuration. For TFCA BDC, defined and allocated Combat System functional requirements and initiated system and software requirements specifications for SSDS (and ICS elements) for cyber-security protections. The boundary defense capabilities will protect and detect threats entering and leaving the Combat System. The centralized Combat System-level cybersecurity capabilities will provide cyber situational awareness and management of various (e.g. malware detection, file integrity verification, etc.) cyber-security protection and detection capabilities. Element-level cyber-security protections will provide additional measures to ensure system integrity. For EASR/ERS, started the systems engineering / analysis to determine the Concept of Integration and initiate the definition and functional allocation of the Combat System requirements to support the full scale development of system and software changes to the Ship Self Defense System (SSDS) ICS for CVN 79/80 and Amphibious Class ships ICS variants in order to integrate the EASR and fire control capabilities for tracking and missile illumination/uplink. The overall scope of the multi-year development will include Systems Engineering/Analysis, M&S, Hardware and Software development, Cyber-Security Capabilities, Factory System Integration Test (FSIT) and Wrap Around Simulation, and Wallops Island System Integration Test for Fire Control Loop elements. - For SSDS MK2 ACB-20/EASR/ERS/TI-16 - Defined the Combat System architecture and initiated the definition and functional allocation of the Combat System requirements for the ACB-20 capabilities, including the integration of ERS (EASR and X-Band TI), to support the full scale development of the ACB-20 / EASR / ERS ICS baseline.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Initiated the RFP for the competitive CSEA contract for the SSDS MK2 ICS development including the SSDS MK2 ACB-20 baseline development and the integration of EASR/ERS/TI-16.					
FY 2017 Plans: For LSD SSDS MK 2 Mod 5C - Initiated software development to transition to software Build 10 with the TI-12H configuration. For CVN78 SSDS MK2 MOD 6C - For the CVN 78, FY 17-FY18 requires collaborative CS efforts to support CSSQT and DT/OT/OPEVAL and achieve requisite deployment capabilities for Ship Self Defense and Strike Group interoperability through extensive integrated testing and software updates. - Complete SSDS MK 2 software design, code, test and integration (DCTI) for the CVN78 ACB-12 baseline for PSA including SEWIP Block 2 and CV-TSC interfaces. Conduct FSIT and FQT for this baseline. - Provide Support for ICS Land-Based integration and engineering tests at WI. This includes test data analysis and system / software trouble report resolution. For LHD6/CVN73 SSDS MK2 MOD 3C/1E ACB-12/TI-12H/TI-16: - Continue the ACB-12 software migration to TI-16 and TI-12H and conduct FSIT/FQT for LHD6 software Build 10. - Provide support for ICS Land-Based integration and engineering test at WI. This includes test data analysis and system / software trouble report resolution. For FCLIP Phase 2 / FTIIP / TFCA BDC baselines - FCLIP: Complete the design and continue software development for CIWS integration with CEC/SSDS MK2. - FCLIP: Complete the design and continue development for the ESSM 2T Up-Link, and NSSMS MK9 Multi-Target Discrimination & Reporting. - FCLIP: Complete the design and continue software development for SoS integration of RAM Block 2 multi-Target processing - FCLIP: Conduct SSDS MK2/CS element design reviews for the FY17 initiatives identified above. - FTIIP: Initiate design and software development for IFF Mode 5 integration with Combat System. - TFCA BDC: Continue designing and developing TFCA Cyber-security improvements to secure the combat system enclave. For SSDS MK2 ACB-20/EASR/ESS/TI-16					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Develop the SoS Combat System and Interface Requirements Documentation for the ACB-20 Warfighting Capability Improvements including EASR and ERS. - Initiate the system engineering analysis for the TI-16 Tech Refresh configuration to define the architecture for the SSDS MK2 ICS ship class variants and the hardware requirements for common infrastructure for computing, display, network and cyber-security. - Complete the RFP for the competitive CSEA contract for the SSDS MK2 ICS development including the SSDS MK2 ACB-20 baseline development and the integration of EASR/ERS/TI-22.					
FY 2018 Base Plans: For LSD SSDS MK 2 Mod 5C - Complete the development of software Build 10 for the TI-12H configuration. Conduct FSIT/FQT for this baseline. For CVN78 SSDS MK2 MOD 6C - For the CVN 78, FY 17-FY18 requires collaborative CS efforts to support CSSQT and DT/OT/OPEVAL and achieve requisite deployment capabilities for Ship Self Defense and Strike Group interoperability through extensive integrated testing and software updates. - Provide TAAF support for LBET at Wallops Island (including TRKEXs with DBR), shipboard post delivery test and trials, and implement software changes/correction for CST for CSSQT. For LHD6/CVN73 SSDS MK2 MOD 3C/1E ACB-12/TI-12H/TI-16 - Complete the ACB-12 software migration to TI-16 and TI-12H and conduct FSIT/FQT for these ship baselines - Provide support for integrated CS land-based integration and engineering test at WI. This includes test data analysis and system / software trouble report resolution For FCLIP Phase 2 / FTIIP / TFCA BDC baselines - Complete the software development for CIWS integration with CEC/SSDS MK2, ESSM 2T Up-Link, and NSSMS MK9 Multi-Target Discrimination & Reporting - Initiate engineering and certification testing of FCLIP Phase 2 improved fire control loop improvements - Continue software development for IFF Mode 5 integration with Combat System. - Continue designing and developing TFCA Cyber-security improvements to secure the combat system enclave. For SSDS MK2 ACB-20/EASR/ERS/TI-16 -Continue systems engineering / analysis to establish the Concept of Integration and initiate the definition and functional allocation of the Combat System requirements to support the full scale development of system					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and software changes to the Ship Self Defense System (SSDS) ICS for CVN 79/80 and L-Class ships ICS variants in order to integrate the SEWIP Block 2/Block 3 Softkill Coordinator, Airborne Off-board Electronic Warfare (AOEW), SEWIP Blk 3EA, RAM Block 2B, Cyber-security improvements and interoperability standard enhancements, to close critical fire control loop and interoperability gaps. The overall scope of the multi-year development will include Systems Engineering/Analysis, M&S, Hardware and Software development, Cyber-Security Capabilities, Factory System Integration Test (FSIT) and Wrap Around Simulation, and Wallops Island System Integration Test for Fire Control Loop elements. - Conduct source selection for planned FY19 Q2 award of the competitive CSEA/SDA contract for the SSDS MK2 ICS development including the SSDS MK2 ACB-20 baseline development with the integration of EASR/ ERS/TI-16. ***FY 2018 OCO Plans:*** N/A					
Title: SSDS MK2 Development Test & Evaluation ***Articles:***	25.265 -	26.940 -	27.479 -	0.000 -	27.479 -
FY 2016 Accomplishments: The T&E/Certification/Land -Based Engineering Test (LBET) efforts include four new SSDS integrated combat system baselines, LSD SSDS MK2 Mod5C, CVN78 SSDS MK 2 Mod 6C, CVN72 SSDS MK2 Mod 1C, and LHD2 SSDS MK2 Mod 3C. For LSD SSDS MK2 Mod 5C configuration with the Phalanx CIWS Block 1B Baseline 2, RAM Block 2 and CPS/ CDS equipment - Completed Live Fire At Sea Testing for LSD MOD 5C on SDTS - Enterprise Test 12 - Completed CSSQT on LSD50 and LSD 45 - Conducted CST at WI for LSD 49 and LSD 51 for certification OQE For LHA6 SSDS MK 2 Mod 4B with ESSM Block 1, RAM Block 2, and OACE equipment - Conducted MSLEX ET 05J on SDTS. - Conducted Cyber Penetration Vulnerability assessment (CPVA), DT/OT-IIIH Phase 3 on LHA6. For CVN78 SSDS MK2 Mod 6C configuration - Continued Land Based system integration and engineering tests for CVN78 SSDS MK2 Engineering Software Releases at WI for the fire control loop including DBR, CEC, UPX-29, ESSM, MK-29 launcher, RAM Block					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
2, and new capabilities for SSDS MK2 / SEWIP Block 2 integration. This included live DBR TRKEXs for the integrated Combat System and the TPX-42 Air Traffic Control System. The testing will also include integration test with HSG, TDL with AMIIP and Air Control. For CVN72 SSDS MK2 ACB-12/TI-12 configuration with SPS-48G, SPS-49A, SPQ-9B, CEC, PL STM, UPX-29, ESSM, NSSMS MK57 MOD13, RAM Block2, SLQ-32(v)4, NULKA, CV-TSC (with MH-60R link) and BFTT -Conducted CSA at WI to provide authorization for the ICS software package for CSLO during RCOH. For LHD2 SSDS MK2 ACB-12/TI-12 configuration with SPS-48G, SPS-49A, SPQ-9B, CEC, PL STM, UPX-29, ESSM,NSSMS MK57 MOD14 (Objective Configuration Phase 2), RAM Block2, SLQ-32(V)3, and BFTT -Conducted CSA at WI to provide authorization for the ICS software package for CSLO For LHD1 SSDS MK 2 Mod 3B - Conducted engineering testing of FTIIP Digital Air Control (Phase) capability at Wallops Island.					
FY 2017 Plans: For LSD SSDS MK2 Mod 5C configuration with the Phalanx CIWS Block 1B Baseline 2, RAM Block 2 and CPS/ CDS - Complete CSSQT on LSD 52 For CVN78 SSDS MK2 Mod6C - Continue Land-Based integration and engineering testing at WI and aboard ship for ICS software changes/ corrections for CVN78 PSA/CSSQT software deliveries, including testing of embedded training capabilities with DBR simulation software. For the CVN 78, FY 17-FY18 requires collaborative Combat System efforts to support CSSQT and DT/OT/OPEVAL and achieve requisite deployment capabilities for Ship Self Defense and Strike Group interoperability through extensive, Integrated Combat System (ICS) testing and software updates. - Initiate Shipboard DT (DT-III J Phase 3 / ET-10) during post-delivery period - Conduct CST#1 at WI for authorization OQE for ICS software package for PSA/CSSQT For CVN72 SSDS MK2 ACB-12/TI-12 configuration with SPS-48G, SPS-49A, SPQ-9B, CEC, PL STM, UPX-29, ESSM, NSSMS MK57 MOD13, RAM Block2, SLQ-32(v)4, NULKA, CV-TSC (with MH-60R link) and BFTT - Conduct CST at WI to provide certification OQE to deliver ICS software package for CIA and deployment.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
For LHD2 SSDS MK2 ACB-12/TI-12 configuration with SPS-48G, SPS-49A, SPQ-9B, CEC, PL STM, UPX-29, ESSM,NSSMS MK57 MOD14 (Objective Configuration Phase 2), RAM Block2, SLQ-32(V)3, and BFTT -Conduct CST to provide certification OQE to deliver ICS software package for deployment. For LHD6/CVN73 SSDS MK2 MOD 3C/1E ACB-12/TI-12H/TI-16 - Initiate Land-Based integration and engineering testing at WI for LHD6 SSDS MK 2 Mod 3C ACB-12/TI-12H configuration. For SSDS MK2 FCLIP Phase 2 / FTIIP / TFCA BDC -Develop Test and Evaluation Plan					
FY 2018 Base Plans: For LSD SSDS MK 2 Mod 5C - Complete CSSQT on LSD49 For CVN78 SSDS MK2 Mod6C - Continue Land-Based integration and engineering testing at WI and aboard ship for ICS software changes/ corrections for CVN78 DT/OT/ OPEVAL and deployment software deliveries. For the CVN 78, FY 17-FY18 requires collaborative Combat System efforts to support CSSQT and DT/OT/OPEVAL and achieve requisite deployment capabilities for Ship Self Defense and Strike Group interoperability through extensive, Integrated Combat System (ICS) testing and software updates. - Conduct Fire Control Loop risk reduction TRKEX/MSLEX on SDTS with DBR (MFR), CEC, SSDS MK2, SEWIP Block 2, ESSM and RAM Block2 - Initiate DT/OT-III J Phase 3/ET-09 MSLEX on SDTS - Conduct CST#2 at WI for authorization OQE for ICS software package for CSSQT Phase 2 For LHD6/CVN73 SSDS MK2 MOD 3C/1E ACB-12/TI-12H/TI-16 - Conduct CST at WI for authorization OQE for ICS software package for LHD6 SSDS Mod 3C ACB-12/TI-12H for CSLO For FCLIP Phase 2/FTIIP/TFCA BDC - Initiate land-based integration and engineering testing at WI					
FY 2018 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Accomplishments/Planned Programs Subtotals	133.299	127.578	148.982	0.000	148.982

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/ BLI 5231 (SSDS): *SSDS*	61.409	54.919	73.086	-	73.086	87.286	89.379	92.234	91.056	Continuing	Continuing
• RDTEN/0603658N: *Cooperative Engagement*	72.472	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	599.936
• RDTEN/0607658N: *Cooperative Engagement Capability*	0.000	84.501	92.571	-	92.571	103.279	111.178	111.616	112.306	Continuing	Continuing

Remarks

Cooperative Engagement Capability (CEC) budget will realign from PE 0603658N to 0607658N starting in FY17.

D. Acquisition Strategy

The first SSDS MK 2 system procurements took place under a Cost Plus Award Fee (CPAF) contract in FY99 for the CVN 76, LPD 17, LPD 18 and CVN 69. Follow-on equipment procurements for additional ships of the CVN, LPD and LHD classes were awarded on Firm Fixed Price (FFP) contracts. For those ships that will be receive P3I OACE COTS tech Refresh hardware suites, the initial system Tech Refresh Development occurred under a CPAF type contract, with ship COTS conversion equipment/kits procured on FFP contracts.

A system engineering/design agent and Life Cycle Maintenance Cost Plus Fixed Fee (CPFF) contract was awarded in FY05 and a follow-on CPFF/CPAF contract, N00024-08-C-5122, was awarded on 30 Sept 2008, to support SSDS MK 2 system/software maintenance and system upgrades through FY13 including the TI-12 COTS Tech Insertion.

A follow on CPIF LOE contract, N00024-14-C-5128, was awarded 18 December, 2013 on a sole source basis for FY14-FY17 for the development, test, certification of SSDS MK2 (ACB12/TI12) for CVN78, CVN72, LHD2, and the software migration of ACB12 to TI-12H/TI16 for CVN68, LHD1, LPD17 ship classes. This contract was extended to December 2018 and an additional extension through June 2020 is planned to complete the Test, Analyze and Fix (TAAF) phase associated with Combat System Integration and Certification of ACB12. For SSDS MK2 TI-12H/TI-16 equipment, the SSDS program will use competitive build to specification production contracts, and leverage common enterprise COTS Open Architecture Computing Environment (OACE) products for computing, storage, display, network, conversion, and cyber-security.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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A competitive Combat System Engineering Agent (CSEA)/SSDS MK2 Software Design Agent (SDA) contract is planned to be awarded in FY2019 with a ten (10)-year period of performance from FY2019-FY2028 with RFP preparation efforts currently underway. The CSEA/SDA competitive procurement is in support of Carrier (CVN) and Amphibious Ship Classes. It will provide support for the SSDS Integrated Combat System (ICS) element and any future surface combatant designated for the SSDS MK 2 ICS post-ACB-12/TI-12/TI-12H/TI-16/TI-16 Tech Refresh and for ACB-20 and follow-on SW and HW technology upgrades. The primary deliverables will be SSDS tactical computer programs, program updates and associated engineering, development, and logistics products. The CSEA will support the in-service SSDS configurations as well as adapt and integrate new or upgraded war-fighting capabilities into the CVN and Amphibious ICS.

A sole source CPAF/CPIF delivery order, N00178-04-D-4112-0004, was awarded in FY05 to acquire a Systems Engineering & Integration (SE&I) agent to support SSDS MK2 (ACB12) development, integration and testing for the CVN78 Class Warfare System. A follow-on competitive CPIF contract was awarded in March 2017 for FY17 through FY22 to provide ICS Systems Engineering, Integration and Test (SEI&T) engineering support in support of SSDS MK2 ICS development and integration for both in-service and future CVN and Amphibious Ship Classes, including ACB-20.

E. Performance Metrics

Requirement Documents
- Capability Development Document (CDD) for Ship Self Defense System (SSDS) MK2 approved 19 December 2013.
- Test and Evaluation Master Plan (TEMP No. 1400) For Ship Self Defense System (SSDS) Revision B, 5 Mar 2008. Revision C is in route and will be signed out in FY17. During the approval cycle, DOT&E requested a major updated to Rev. C to include cyber security T&E requirements.

Background
- SSDS MK1 OPEVAL was successfully completed June 1997 with a Milestone III approval in March 1998
- SSDS MK2 MOD 1 FOT&E was conducted on CVN 76 in 2005. All KPP thresholds were met. However, the system was assessed as not suitable and not effective by COMOPTEVFOR based on the identification of SSDS MK2 and Combat Systems deficiencies (24major, 37 minor deficiencies).
- SSDS MK 2 Mod 2 FOT&E was conducted in LPD 17-19 in 2007/2008. All KPPs thresholds were met and the system was assessed OPERATIONALLY EFFECTIVE and OPERATIONALLY SUITABLE by COMOPTEVFOR in the 12 Feb 2010 report. 10 major and minor deficiencies were identified against SSDS MK 2. (Also, major Warfare effects deficiencies were identified against the LPD 17 class Combat System).
- SSDS MK 2 Mod 3A FOT&E was conducted in LHD 8 in Feb 2010. All KPPs thresholds were met and the system was assessed OPERATIONALLY EFFECTIVE and OPERATIONALLY SUITABLE by COMOPTEVFOR in the 13 Dec 2010 report. 10 major deficiencies were identified against SSDS MK 2. (Also, major Warfare effects deficiencies were identified against the LHD 8 Combat System).
- SSDS MK2 FOT&E with ESSM and RAM Block 1 was conducted in the SDTS Oct-Dec 2011 as part of Enterprise Test - 03. Combat System (system-of-system) deficiencies identified during MSLEX with stressing targets has resulted in a phased corrective action plan, designated as Fire Control Loop Improvement Project (FCLIP).
- SSDS MK2 FOT&E with RAM Block 2 DT&E was conducted in the SDTS Dec 2014 as part of Enterprise Test - O5 Phase 2. Low altitude, supersonic, maneuvering targets were successfully engaged with RAM Block 2 missiles.
- Conducted Enterprise Test (ET) Event 5 and Event 6 against a wide array of subsonic and supersonic targets during live fire testing conducted against the Self Defense Test Ship (SDTS) and the USS America (LHA 6) to assess performance of the Integrated Combat System (ICS).
- April 2016, at the Navy's test facility at Point Mugu, CA, the SDTS LHA6-configured SSDS MK 2 integrated CS utilizing the Rolling Airframe Missile (RAM) Guided Missile Weapons System (comprised of the MK 49 Launcher and the Block 2 missile) successfully completed a live fire test by engaging and killing a pair of supersonic,

maneuvering, sea-skimming targets designed to represent current anti-ship missile threats. The test event validated that significant progress has been made FCLIP program which was designed to improve coordination across all elements of the overall SSDS integrated CS. This test was the second successful integrated combat systems firing event against this surrogate threat accomplished by the shipboard air search radars and surface to air missiles found on U.S. Navy Amphibious Class ships. The integrated CS is comprised of the SSDS Mk 2 Mod 4B, SPS-48, SPS-49, SPQ-9B, SLQ-32, Evolved Sea Sparrow Missile and RAM Block 2 missile.
Status
- The Director, Operational Test and Evaluation (DOT&E) Annual Reports have identified ship self-defense mission deficiencies based on operational testing. The report is a compilation of multiple reports from Commander,
Operational Test Force (COTF) including shipboard testing on the CVN 76, CVN 70, LPD 17, LPD 18, LPD 19, LHD 8; and enterprise testing on the SDTS and in the Probability of Raid Annihilation (PRA) test-bed.
- SSDS was assessed Operationally Effective and Operationally Suitable for the LPD 17 Class and LHD 8. The Combat Systems (CVN, LPD, LHD) were assessed Not Operationally Effective against several Anti-Ship Cruise Missiles (ASCM). There are system of systems performance issues and design limitations. The issues are divided into four categories: detect, engage, test resources, and threat representation.
- All of the major training deficiencies have been addressed and are pending Verification of Correction of Deficiency (VCD) by COTF. Revised SSDS NTSP was signed 30 Jul 2012.
- OPNAV N96 is working with PEO IWS, DASN, and COTF to address the shortfalls in performance testing with the following initiatives:

a. Develop, test and field combat system improvements through the Fire Control Loop Improvement Project (FCLIP) Phase 1 with SSDS MK2 integration of: High Diver improvements to SPS-48E and CEC; SPQ-9B tracking improvements; North Atlantic Treaty Organization (NATO) Seasparrow Surface Missile System (NSSMS) MK 9 Target Illuminator improvements.
b. Integrate, test, and field SEWIP Block 2, and NULKA improvements.
c. Expand the use of Modeling and Simulation.
d. Develop FCLIP Phase 2 capabilities for RAM Block 2 Multi-Target processing, NSSMS MK9 TI Multi-Target discrimination and reporting, ESSM 2T Up-link and CIWS integration with CEC / SSDS MK2.
e. Consider follow on high return self-defense improvements with FCLIP and Advanced Capability Builds (ACB).
- Additional T&E and certification initiatives include:
a. Conduct element and platform level cyber-security testing using land based test site (LBTS) facilities.
b. Move away from platform centric certification testing towards baseline configuration centric testing for combat systems certification testing.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PD - ACB12/TI12 / LSD - PSEA / SW Dev't	SS/CPIF	RSC IDS (5128) : San Diego, CA	62.438	34.302	Feb 2016	24.178	Dec 2016	8.006	Dec 2017	-		8.006	Continuing	Continuing	Continuing
PD - ACB12/TI12 / LSD / AMIIP - PSEA / SW Dev't	SS/CPAF	RSC IDS (5122) : San Diego, CA	38.416	0.000		0.000		0.000		-		0.000	0.000	38.416	-
PD - ACB12/TI12 / LSD - SE	SS/CPFF	JHU/APL : Laurel, MD	66.887	4.145	Feb 2016	2.112	Dec 2016	1.250	Dec 2017	-		1.250	Continuing	Continuing	Continuing
PD - ACB12/TI12 / LSD - SW Dev/PL-STM	SS/CPAF	Gen. Dyn. (5100) : Fairfax, VA	3.628	0.000		0.000		0.000		-		0.000	0.000	3.628	-
PD - ACB12/TI12 / LSD - SE	WR	NSWC DD : Dalhgren, VA	69.731	6.019	Jan 2016	6.169	Nov 2016	1.150	Dec 2017	-		1.150	Continuing	Continuing	Continuing
PD - ACB12/TI12 / LSD - SE / ILS	WR	CDSA DN : Dam Neck, VA	22.284	0.643	Jan 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
PD - ACB12/TI12 / LSD - SE&I/Force Pt	C/CPIF	RSC (IIS) : Suffolk, VA	0.361	0.615	Dec 2016	0.000		0.000		-		0.000	0.000	0.976	-
PD - ACB12/TI12 / LSD - LBET/TrainingI	WR	NSWC PHD : Pt Hueneme, CA	25.676	4.347	Jan 2016	1.751	Nov 2016	0.975	Dec 2017	-		0.975	Continuing	Continuing	Continuing
PD - ACB12/TI12 / LSD - CVN78 LBET/Metrics/On-site Support	WR	NSWC Corona : Corona, CA	0.000	0.412	Jan 2016	0.736	Nov 2016	0.125	Nov 2017	-		0.125	0.000	1.273	-
PD - ACB12/TI12 / LSD -Navy Link Cert/Cross-Domain Sprt	WR	SPAWAR : San Diego, CA	0.000	0.225	Feb 2016	0.210	Nov 2016	0.000		-		0.000	0.000	0.435	-
PD - ACB12/TI12 / LSD - Moriah Integration	WR	NAVAIR : Lakehurst, NJ	0.000	0.309	Feb 2016	0.000		0.000		-		0.000	0.000	0.309	-
PD - ACB12/ CVN78 LBET w/DBR/RES	SS/CPIF	RSC IDS : Sudbury, MA	0.000	0.000		5.080	Jan 2017	0.000		-		0.000	0.000	5.080	-
PD - ACB12/ CVN78 LBET w/CEC	SS/CPIF	RSC IDS : St. Petersburg, FL	0.000	0.000		1.275	Jan 2017	0.000		-		0.000	0.000	1.275	-
PD - ACB12/ CVN78 LBET w/TPX-42	WR	NAVAIR : St. Inigoes, MD	0.000	0.000		0.111	Mar 2017	0.000		-		0.000	0.000	0.111	-
PD - ACB12/TI-16/TI12H - HW Dev / ILS / EDM Proc (DN)	WR	CDSA DN : Dam Neck, VA	6.306	5.145	Jan 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PD - ACB12/TI-16/TI12H - HW Engr	WR	NSWC DD : Dalhgren, VA	0.325	2.093	Jan 2016	7.765	Nov 2016	2.480	Dec 2017	-		2.480	Continuing	Continuing	Continuing
PD - ACB12/TI-16/TI12H - SW Migration PSEA	SS/CPIF	RSC IDS (5128) : San Diego, CA	1.864	9.935	Feb 2016	12.572	Dec 2016	27.566	Dec 2017	-		27.566	Continuing	Continuing	Continuing
PD - ACB12/TI-16/TI12H - SE	SS/CPFF	JHU/APL : Laurel, MD	0.000	0.461	Jan 2016	1.025	Dec 2016	2.000	Dec 2017	-		2.000	0.000	3.486	-
PD - ACB12/TI-16/TI12H - LBET/Training Course Development	WR	NSWC-PHD : Pt Hueneme, CA	0.000	0.000		0.575	Nov 2016	2.000	Nov 2017	-		2.000	Continuing	Continuing	Continuing
PD - ACB12/TI-16/TI12H - Metrics/On-Site Sprt	WR	NSWC Corona : Corona, CA	0.000	0.251	Jan 2016	0.418	Nov 2016	0.418	Nov 2017	-		0.418	0.000	1.087	-
PD - ACB12/TI-16/TI12H - CPS Engnr	C/IDIQ	GTS : Virginia Beach, VA	0.000	0.042	Apr 2016	0.000		0.000		-		0.000	0.000	0.042	-
PD - ACB12/TI-16/TI12H - Navy Link Cert/Cross-Domain Sprt	WR	SPAWAR : San Diego, CA	0.000	0.000		0.000		0.326	Nov 2017	-		0.326	0.000	0.326	-
PD - TFCA - BDC PSEA SW DEV'T	SS/CPIF	RSC IDS (5128) : San Diego, CA	0.000	1.785	Feb 2016	4.346	Dec 2016	5.223	Dec 2017	-		5.223	Continuing	Continuing	Continuing
PD - TFCA - BDC SE	SS/CPFF	JHU/APL : Laurel, MD	0.000	0.462	Feb 2016	0.775	Dec 2016	0.791	Dec 2017	-		0.791	Continuing	Continuing	Continuing
PD - TFCA - BDC SE	WR	NSWC-DD : Dalhgren, VA	0.000	0.708	Jan 2016	2.016	Nov 2016	1.610	Nov 2017	-		1.610	Continuing	Continuing	Continuing
PD - TFCA - BDC SE	WR	CDSA DN : Dam Neck, VA	0.000	0.864	Jan 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
PD - TFCA - BDC Cyber Products	C/CPIF	Progeny Systems Corp : Manasas, Va	0.000	0.181	Feb 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
PD - TFCA - BDC SE	WR	NRL/Delta/G2OPS : Washington DC	0.000	0.000		0.207	Apr 2017	0.211	Nov 2017	-		0.211	0.000	0.418	-
PD - TFCA - BDC SE	C/BA	NSWC PHD : Port Hueneme, CA	0.000	0.000		0.657	Nov 2016	0.670	Nov 2017	-		0.670	0.000	1.327	-
PD - TI-16TR/TI22 - HW Engineering	WR	CDSA DN : Dam Neck, VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PD - TI-16TR/TI22 -HW Engineering	WR	NSWC-DD : Dalhgren, VA	0.000	0.000		0.100	Nov 2016	0.920	Nov 2017	-		0.920	0.000	1.020	-
PD - HQ Travel	Various	PEO IWS : Washington DC	0.150	0.100	Jan 2016	0.120	Dec 2016	0.150	Nov 2017	-		0.150	Continuing	Continuing	Continuing
PD - SE/Dev/Integrate	SS/CPAF	Rayth(5412) (RIDS) : Portsmouth, RI	83.451	0.000		0.000		0.000		-		0.000	0.000	83.451	-
PD - Misc - Prior Year Cum Cost	C/BA	Misc : Washington DC	278.994	0.000		0.000		0.000		-		0.000	0.000	278.994	-
PD - PM Prod Development	C/CPIF	various : various	28.431	2.552	Feb 2016	2.603	Dec 2016	2.943	Dec 2017	-		2.943	0.000	36.529	-
CSI - ACB20 (Less EASR) - SE	WR	NSWC DD : Dalhgren, VA	0.000	0.000		0.000		5.520	Nov 2017	-		5.520	0.000	5.520	-
CSI - ACB20 (Less EASR) - SE	WR	NSWC PHD : Port Huneme, CA	0.000	0.000		0.000		0.323	Nov 2017	-		0.323	0.000	0.323	-
CSI - ACB20 (Less EASR) - SE	WR	NUWC KP : Keyport, WA	0.000	0.000		0.000		0.161	Nov 2017	-		0.161	0.000	0.161	-
CSI - ACB20 (Less EASR) - SE	SS/CPAF	Rayth (RIDS) : Portsmouth, RI	0.000	0.000		0.000		1.075	Dec 2017	-		1.075	0.000	1.075	-
CSI - ACB20 (Less EASR) - SEI&T	C/CPIF	Gryphon/Delta : Washington DC	0.000	0.000		0.000		4.375	Dec 2017	-		4.375	0.000	4.375	-
CSI - ACB20 (Less EASR) - SE	SS/CPFF	JHU/APL : Laurel, MD	0.000	0.000		0.000		5.458	Dec 2017	-		5.458	0.000	5.458	-
CSI - FCLIP Phase 2 - PSEA	SS/CPIF	RSC IDS (5128) : San Diego, CA	0.593	6.574	Feb 2016	5.030	Dec 2016	7.527	Dec 2017	-		7.527	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE	SS/CPFF	JHU/APL : Laurel, MD	1.530	5.580	Feb 2016	2.350	Dec 2016	2.258	Dec 2017	-		2.258	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE	WR	NSWC-DD : Dahlgren, VA	0.432	0.986	Jan 2016	0.279	Nov 2016	0.724	Nov 2017	-		0.724	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE	WR	CDSA DN : Dam Neck, VA	0.000	0.125	Jan 2016	0.000		0.000		-		0.000	0.000	0.125	-
CSI - FCLIP Phase 2 - SE	WR	NSWC PHD : Pt Hueneme, CA	0.206	0.200	Jan 2016	0.000		0.452	Nov 2017	-		0.452	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CSI - FCLIP Phase 2 - SE / Planning	C/CPIF	Delta Resources : Virginia Beach, VA	0.000	0.339	Feb 2016	0.000		0.000		-		0.000	0.000	0.339	-
CSI - FCLIP Phase 2 - SE & I	C/CPIF	RSC IIS (4112) : Suffolk, VA	0.103	2.033	Feb 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SEI&T	C/CPIF	Gryphon/Delta : Washington DC	0.000	0.000		0.527	Dec 2016	1.151	Dec 2017	-		1.151	0.000	1.678	-
CSI - FCLIP Phase 2 - SE Multi-Link Antenna	TBD	IWS 5 : TBD	0.000	0.250	Jan 2016	0.000		0.000		-		0.000	0.000	0.250	-
CSI - FCLIP Phase 2 - SE RAM/ESSM	WR	NAWC : China Lake	0.000	1.340	Feb 2016	0.557	Nov 2016	0.591	Nov 2017	-		0.591	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE RAM/CIWS	SS/CPFF	RSC(5432/5410) : Tuscon, AZ	0.000	1.080	Feb 2016	0.000		1.882	Dec 2017	-		1.882	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE	WR	NSWC : Crane, IN	0.000	0.250	Jan 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FCLIP Phase 2 - SE / SW Dev't	SS/CPAF	Rayth (RIDS) : Portsmouth, RI	0.000	2.792	Feb 2016	5.760	Dec 2016	2.903	Dec 2017	-		2.903	0.000	11.455	-
CSI - FCLIP Phase 2 - SE	WR	NUWC KP : Keyport, WA	0.000	0.200	Feb 2016	0.000		0.269	Nov 2017	-		0.269	0.000	0.469	-
CSI - FTIIP - PSEA - SW Dev't	SS/CPIF	RSC IDS (5128) : San Diego, CA	0.000	1.413	Feb 2016	1.631	Dec 2016	7.429	Dec 2017	-		7.429	Continuing	Continuing	Continuing
CSI - FTIIP - SE	C/BA	JHU/APL : Laurel, MD	0.000	0.151	Feb 2016	0.000		0.300	Nov 2017	-		0.300	0.000	0.451	-
CSI - FTIIP - SE	WR	NSWC-DD : Dahlgren, VA	0.000	0.425	Jan 2016	0.652	Nov 2016	3.602	Nov 2017	-		3.602	Continuing	Continuing	Continuing
CSI - FTIIP - SE	WR	CDSA DN : Dam Neck, VA	0.000	0.616	Jan 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FTIIP - SE&I	C/CPIF	RSC IIS (4112) : Suffolk, VA	0.000	0.495	Feb 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - FTIIP - SE	WR	NSWC PHD : Port Hueneme, CA	0.000	0.000		0.000		0.215	Nov 2017	-		0.215	0.000	0.215	-
CSI - FTIIP - SEI&T	C/CPIF	Gryphon/Delta : Washington DC	0.000	0.000		0.731	Nov 2016	1.034	Dec 2017	-		1.034	0.000	1.765	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / *Ship Self Def (Detect & Cntrl)*	Project (Number/Name) 2178 / *QRCC*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CSI - FTIIP - SE	WR	NUWC KP : Keyport, WA	0.000	0.000		0.186	Nov 2016	0.000		-		0.000	0.000	0.186	-
CSI - ICS SE - PSEA SE	SS/CPIF	RSC IDS (5128) : San Diego, CA	0.508	0.300	Feb 2016	0.331	Dec 2016	0.215	Dec 2017	-		0.215	0.000	1.354	-
CSI - ICS SE - SE&I	C/CPIF	RSC (IIS) : Suffolk, VA	1.626	0.778	Feb 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - ICS SE - SEA 05C	C/BA	SEA 05C : Washington DC	0.000	0.237	Feb 2016	0.165	Dec 2016	0.215	Nov 2017	-		0.215	0.000	0.617	-
CSI - ICS SE - SEI&T	C/CPIF	Gryphon/Delta : Washington DC	0.000	0.000		1.427	Dec 2016	1.622	Nov 2017	-		1.622	0.000	3.049	-
CSI - ICS SE	SS/CPFF	JHU/APL : Laurel, MD	0.986	1.469	Feb 2016	1.819	Dec 2016	1.450	Dec 2017	-		1.450	Continuing	Continuing	Continuing
CSI - ICS SE	WR	NSWC DD : Dalhgren, VA	1.868	1.200	Jan 2016	0.839	Nov 2016	1.669	Nov 2017	-		1.669	Continuing	Continuing	Continuing
CSI - ICS SE	WR	CDSA DN : Dam Neck, VA	0.215	0.300	Jan 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CSI - ICS SE	WR	NUWC KP : Keyport, WA	0.000	0.300	Feb 2016	0.103	Nov 2016	0.269	Nov 2017	-		0.269	0.000	0.672	-
CSI - ICS SE	C/CPIF	Delta Resources : Virginia Beach, VA	0.000	0.205	Feb 2016	0.000		0.000		-		0.000	0.000	0.205	-
CSI - ICS SE	FFRDC	MITRE : McClean, VA	0.000	0.300	Feb 2016	0.000		0.000		-		0.000	0.000	0.300	-
CSI - EASR / ESS SE	SS/CPFF	JHU/APL : Laurel, MD	0.000	1.067	Feb 2016	0.750	Dec 2016	3.575	Dec 2017	-		3.575	Continuing	Continuing	Continuing
CSI - EASR / ESS SE	WR	NSWC DD : Dalhgren, VA	0.000	0.274	Jan 2016	1.444	Nov 2016	2.970	Nov 2017	-		2.970	Continuing	Continuing	Continuing
CSI - EASR / ESS / SEI&T	C/CPIF	Gryphon/Delta : Washington DC	0.000	0.640	Feb 2016	1.256	Dec 2016	2.344	Nov 2017	-		2.344	0.000	4.240	-
CSI - EASR / ESS SE	WR	CDSA DN : Dam Neck, VA	0.000	0.273	Jan 2016	0.000		0.000		-		0.000	0.000	0.273	-
CSI - EASR / ESS SE	C/CPAF	RSC (5202) : St. Pete, FL	0.000	0.246	Jan 2016	0.000		0.788	Nov 2017	-		0.788	0.000	1.034	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / *Ship Self Def (Detect & Cntrl)*	Project (Number/Name) 2178 / *QRCC*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CSI - EASR / ERS SE	WR	NSWC PHD : Port Huneme, CA	0.000	0.000		0.000		0.323	Nov 2017	-		0.323	0.000	0.323	-
		Subtotal	697.009	108.034		100.638		121.503		-		121.503	-	-	-

Remarks

- The funding increase of $20.758M from FY 2017 to FY 2018 for PU 2178 supports commencing SSDS MK2 ACB20 system engineering/analysis supporting the development of system and software changes for the SSDS ICS in order to integrate the SEWIP Block 3 capabilities; ESSM Block 2 missile system; and Cyber-Security improvements, in future and in-service CVN and Amphibious Class ship CS variants as well as continuing SSDS MK2 integration, test and evaluation and certification testing for the SSDS MK2 ACB-12/TI-12 integrated CS. For the CVN 78, FY17-FY18 includes major, collaborative CS efforts to support DT/OT/OPEVAL and achieve requisite deployment capabilities for Ship Self Defense and Strike Group Interoperability through extensive integrated testing and software updates.
For FY16-FY18, new contracts have been established on a competitive basis with Tech Marine for financial management support, with CACI for Acquisition/Logistics support, and with Strategic Insight for Program Management Support.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DT&E (PHD)	WR	NSWC PHD : Port Hueneme, CA	94.481	3.848	Jan 2016	6.671	Nov 2016	5.286	Nov 2017	-		5.286	Continuing	Continuing	Continuing
DT&E (SCSC-WI)	WR	SCSC-WI : Wallops Is, VA	61.384	6.926	Jan 2016	5.200	Nov 2016	6.954	Nov 2017	-		6.954	Continuing	Continuing	Continuing
DT&E (JHU/APL)	SS/CPFF	JHU/APL : Laurel, MD	19.819	2.303	Feb 2016	3.165	Dec 2016	2.929	Dec 2017	-		2.929	Continuing	Continuing	Continuing
DT&E (Corona)	WR	NSWC Corona : Corona, CA	8.626	2.992	Jan 2016	2.870	Nov 2016	2.959	Nov 2017	-		2.959	Continuing	Continuing	Continuing
DT&E (RAM/CIWS// ESSM) (RSC)	SS/CPFF	RSC(5432/5410) : Tucson, AZ	3.153	0.535	Feb 2016	0.412	Nov 2016	0.424	Nov 2017	-		0.424	Continuing	Continuing	Continuing
DT&E/CST (DD - CST)	WR	NSWC DD : Dahlgren, VA	14.670	5.434	Jan 2016	6.211	Nov 2016	6.404	Nov 2017	-		6.404	Continuing	Continuing	Continuing
DT&E (COTF)	WR	OPTEVFOR : Norfolk, VA	3.812	0.828	Jan 2016	1.194	Nov 2016	1.231	Nov 2017	-		1.231	Continuing	Continuing	Continuing
DT&E (CDSA-DN)	WR	CDSA DN : Dam Neck, VA	4.077	0.579	Jan 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DT&E (engility)	C/CPIF	Engility : Virginia Beach, VA	0.000	1.820	Feb 2016	1.217	Dec 2016	1.292	Dec 2017	-		1.292	0.000	4.329	-
DT&E (SPAWAR-SD)	WR	SPAWAR : San Diego, CA	5.780	0.000		0.000		0.000		-		0.000	0.000	5.780	-
DT&E (Raytheon - St. Pete)	SS/CPAF	RSC (5202) : St. Pete, FL	4.708	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DT&E (RAM/ESSM) (China Lake)	WR	NAWC : China Lake, CA	1.150	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
DT&E (Raytheon - SE&I)	C/CPIF	Rayth - IIS : Sofolk, Va.	0.571	0.000		0.000		0.000		-		0.000	0.000	0.571	-
DT&E Raytheon - PSEA	SS/CPIF	RSC (5128) : San Diego, CA	0.182	0.000		0.000		0.000		-		0.000	0.000	0.182	-
DT&E (GD/AIS - IWS 1.0)	SS/CPAF	GD/AIS : Fairfax Va.	0.266	0.000		0.000		0.000		-		0.000	0.000	0.266	-
DT&E (Raytheon - RIDS)	SS/CPAF	RSC (5412) : Portsmouth, RI	1.902	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	224.581	25.265		26.940		27.479		-		27.479	-	-	-

Remarks

- Accomplishment of SSDS MK2 CS integration and certification testing for ship system installation and deployment;
- Accomplishment of the CVN78 CSSQT and SSDS MK2 ACB-12/TI-12 integrated CS test and evaluation (At-Sea aboard CVN78 and aboard the Self Defense Test Ship (SDTS).

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	921.590	133.299		127.578		148.982		-		148.982	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

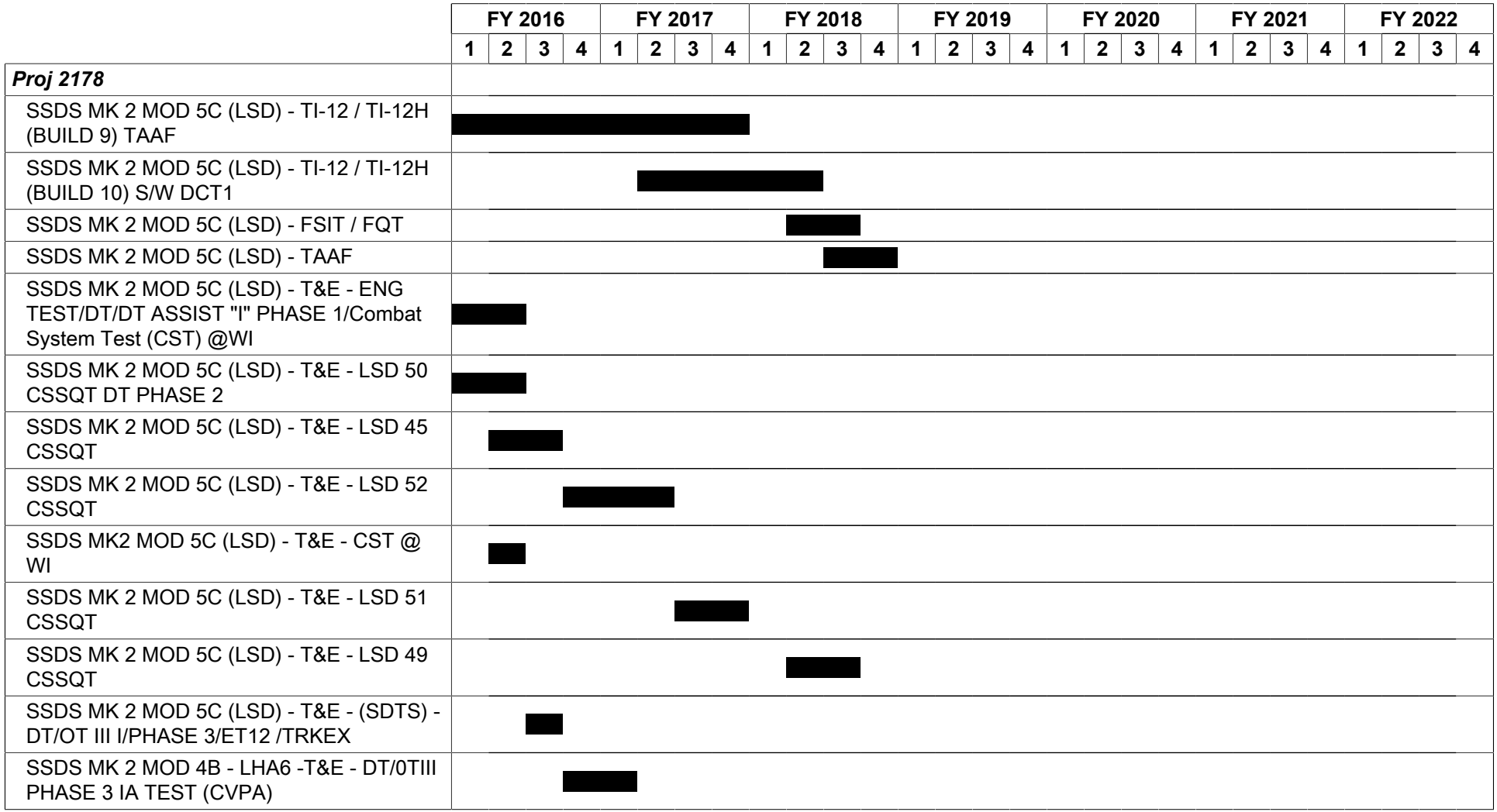

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

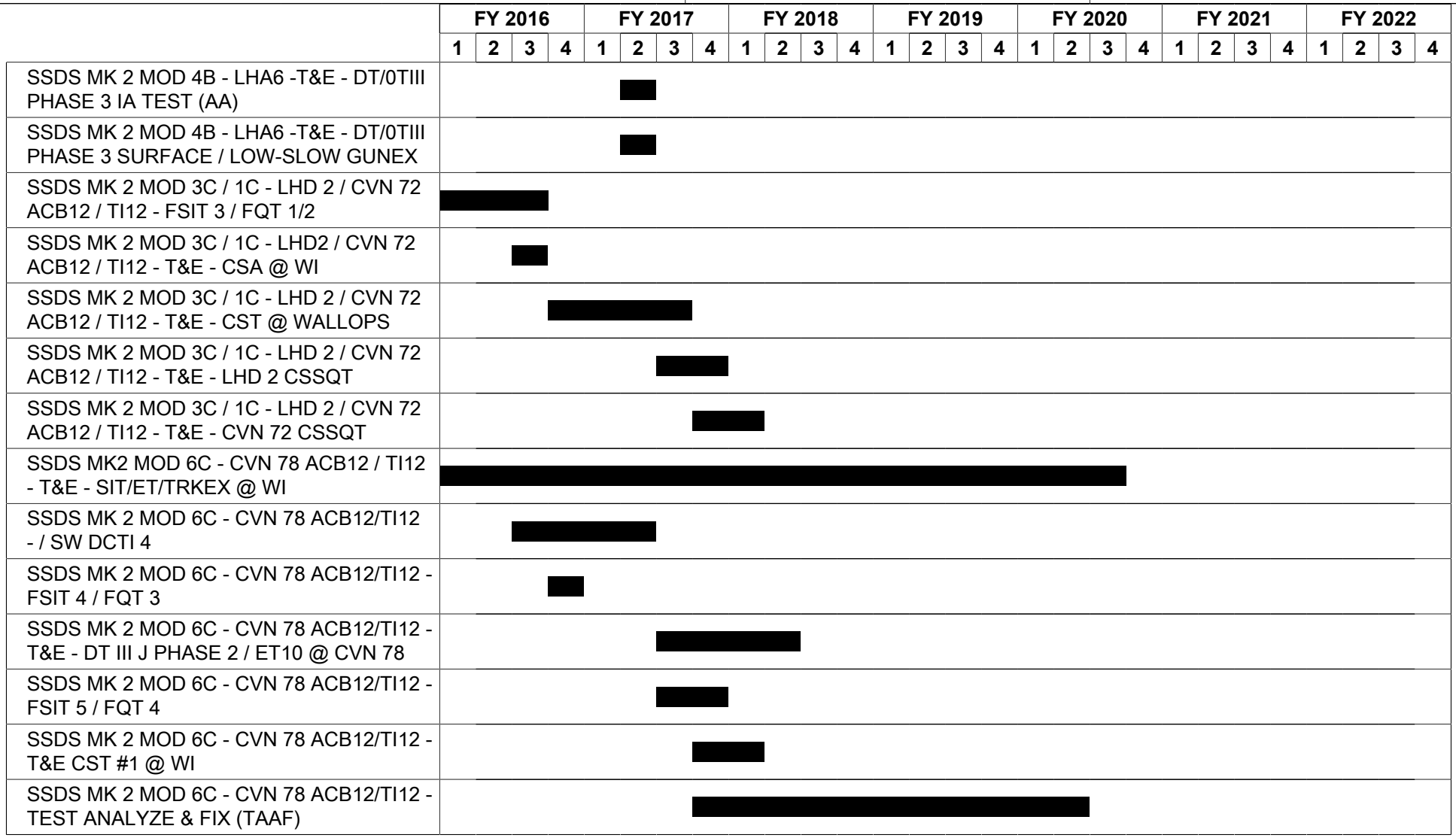

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

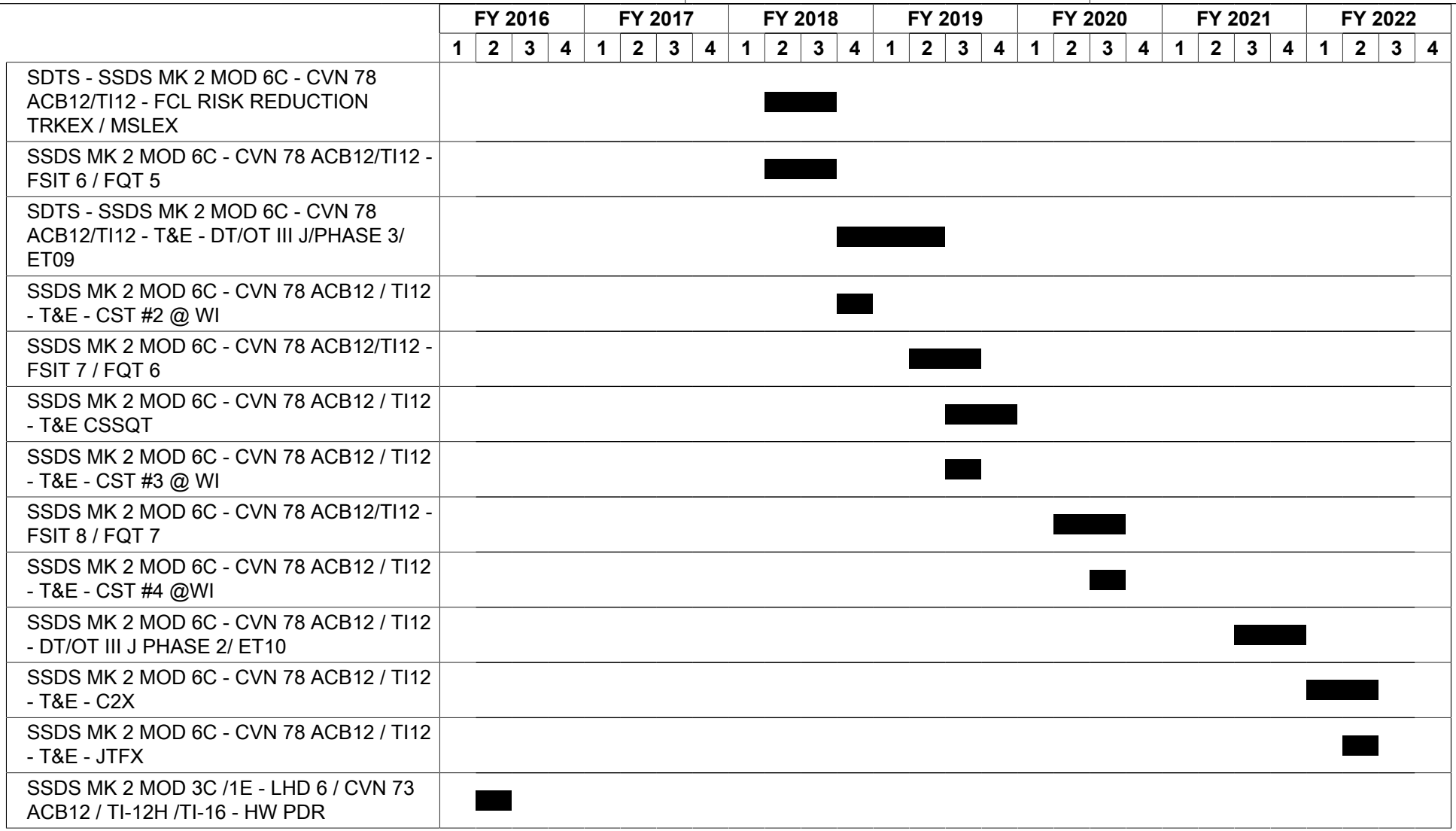

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

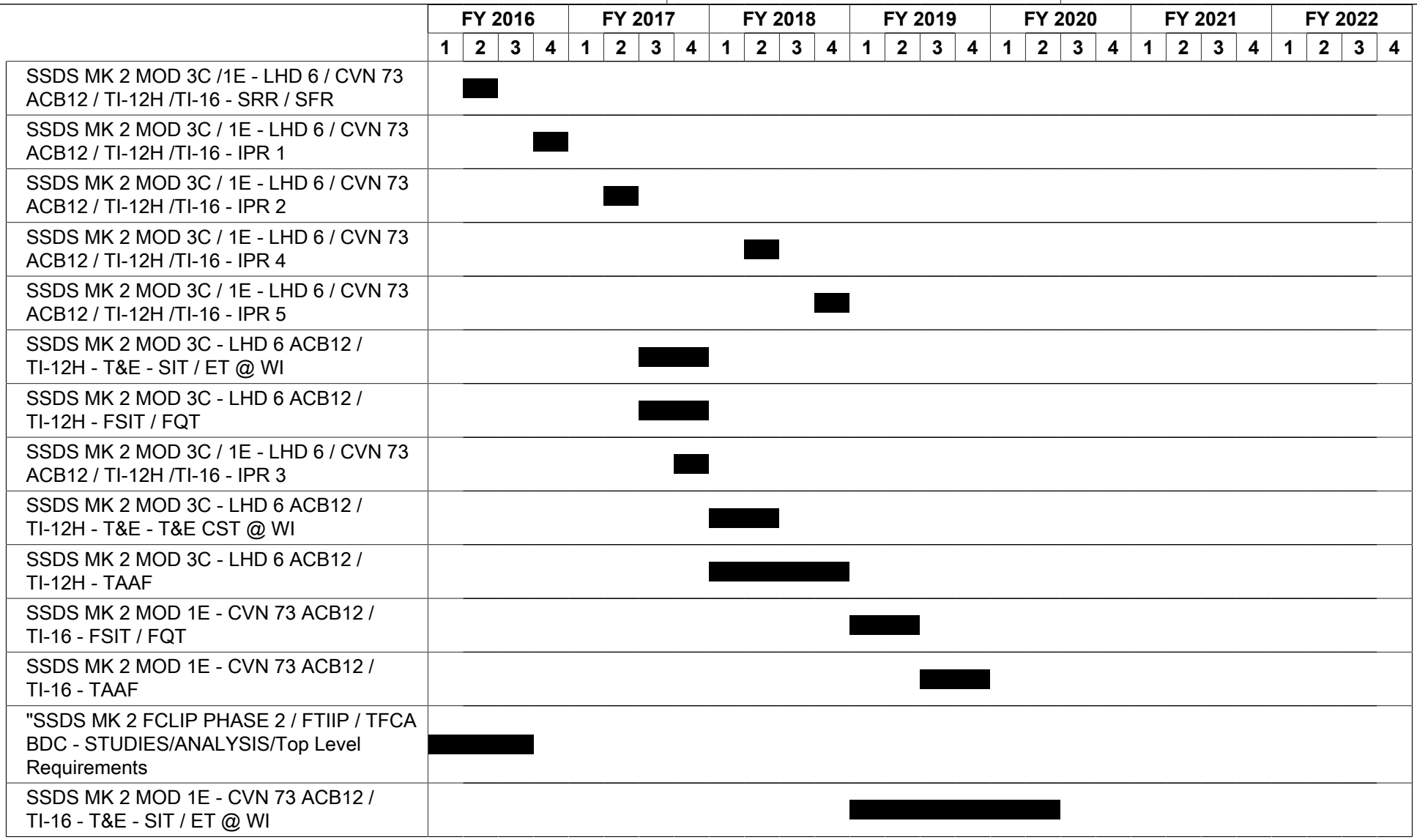

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

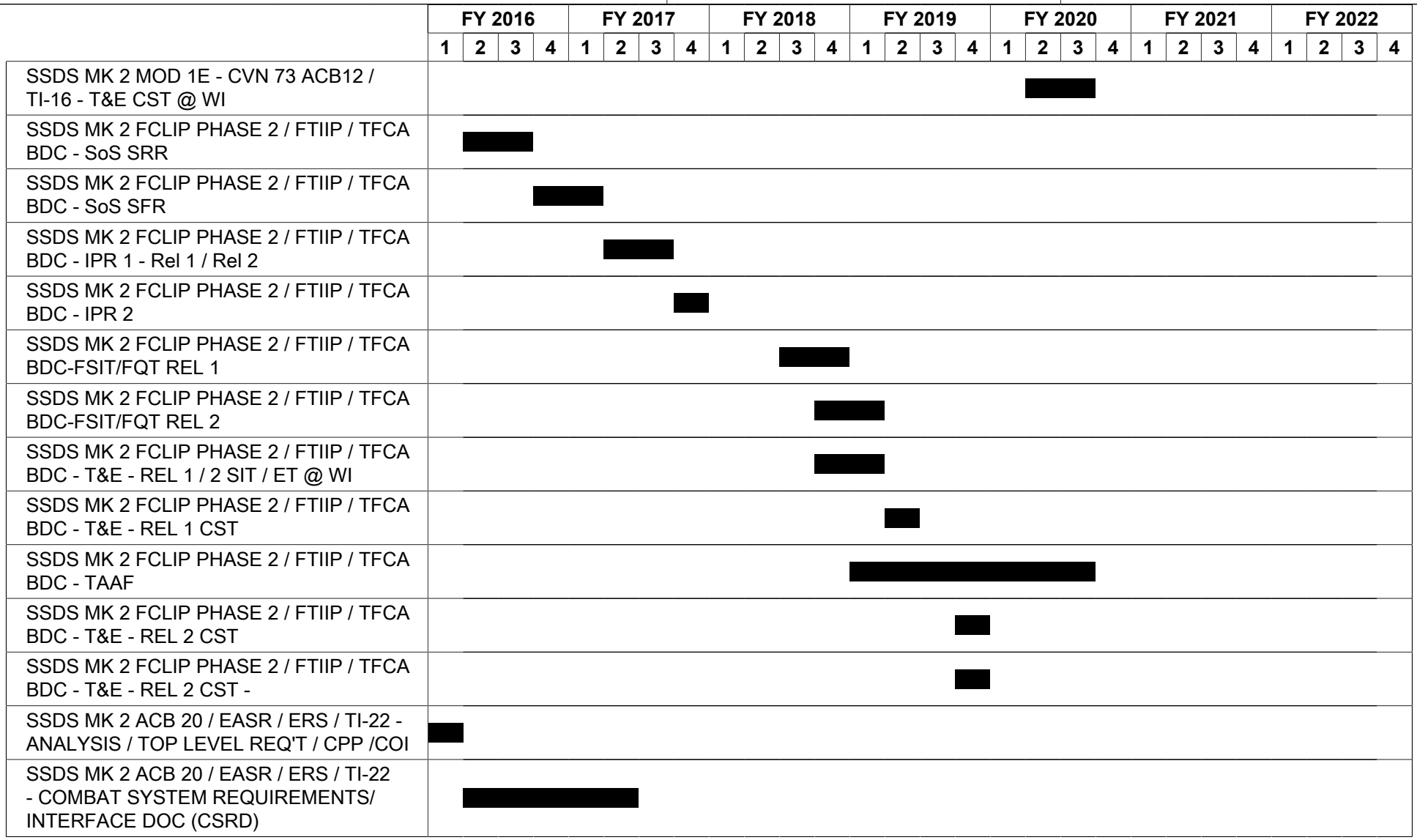

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

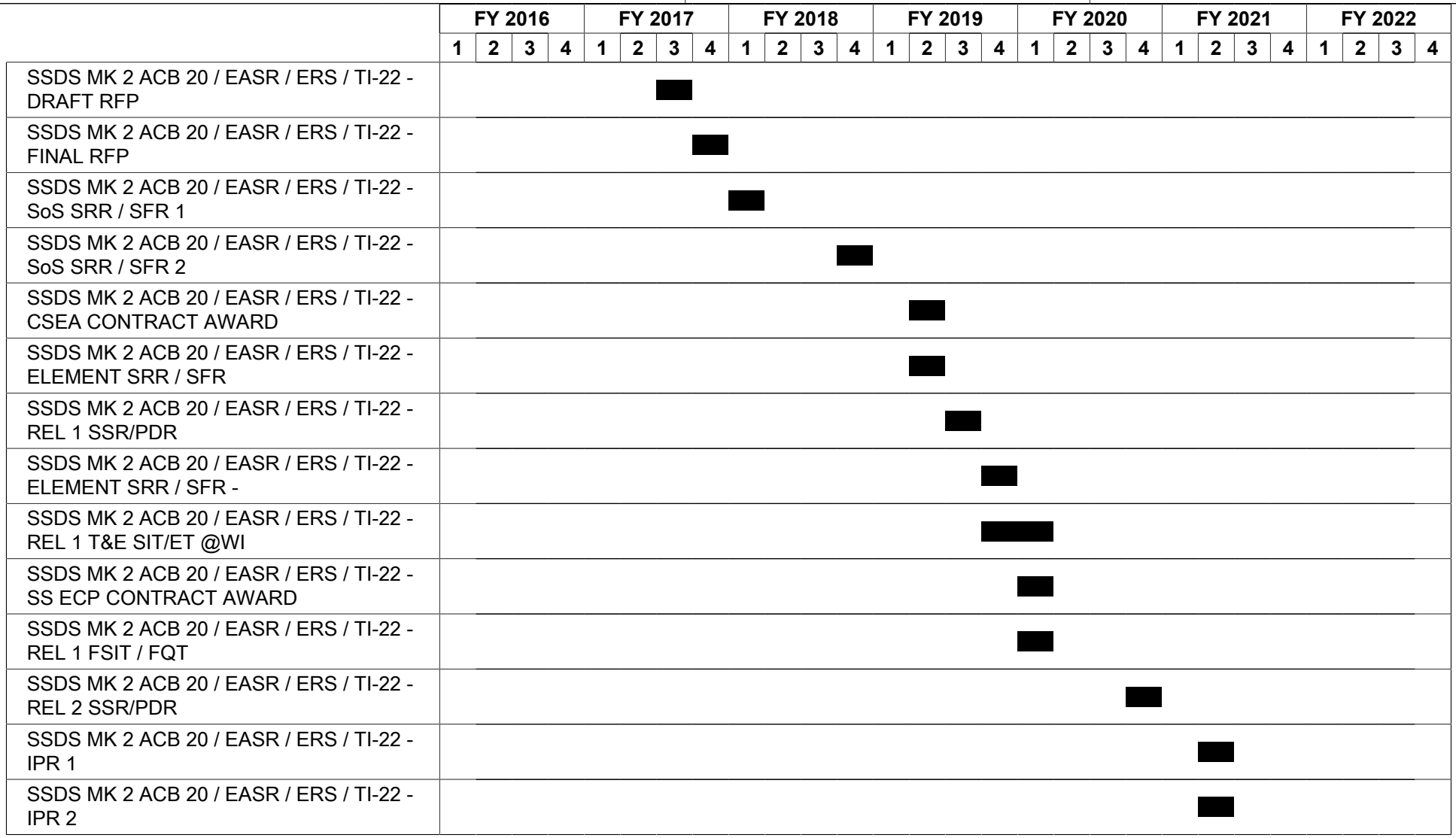

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

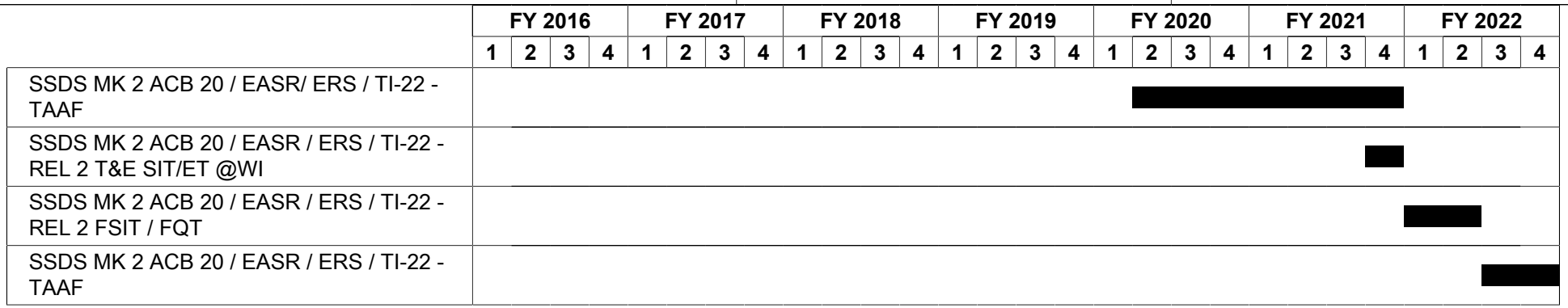

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2178				
SSDS MK 2 MOD 5C (LSD) - TI-12 / TI-12H (BUILD 9) TAAF	1	2016	4	2017
SSDS MK 2 MOD 5C (LSD) - TI-12 / TI-12H (BUILD 10) S/W DCT1	2	2017	2	2018
SSDS MK 2 MOD 5C (LSD) - FSIT / FQT	2	2018	3	2018
SSDS MK 2 MOD 5C (LSD) - TAAF	3	2018	4	2018
SSDS MK 2 MOD 5C (LSD) - T&E - ENG TEST/DT/DT ASSIST "I" PHASE 1/Combat System Test (CST) @WI	1	2016	2	2016
SSDS MK 2 MOD 5C (LSD) - T&E - LSD 50 CSSQT DT PHASE 2	1	2016	2	2016
SSDS MK 2 MOD 5C (LSD) - T&E - LSD 45 CSSQT	2	2016	3	2016
SSDS MK 2 MOD 5C (LSD) - T&E - LSD 52 CSSQT	4	2016	2	2017
SSDS MK2 MOD 5C (LSD) - T&E - CST @ WI	2	2016	2	2016
SSDS MK 2 MOD 5C (LSD) - T&E - LSD 51 CSSQT	3	2017	4	2017
SSDS MK 2 MOD 5C (LSD) - T&E - LSD 49 CSSQT	2	2018	3	2018
SSDS MK 2 MOD 5C (LSD) - T&E - (SDTS) - DT/OT III I/PHASE 3/ET12 /TRKEX	3	2016	3	2016
SSDS MK 2 MOD 4B - LHA6 -T&E - DT/0TIII PHASE 3 IA TEST (CVPA)	4	2016	1	2017
SSDS MK 2 MOD 4B - LHA6 -T&E - DT/0TIII PHASE 3 IA TEST (AA)	2	2017	2	2017
SSDS MK 2 MOD 4B - LHA6 -T&E - DT/0TIII PHASE 3 SURFACE / LOW-SLOW GUNEX	2	2017	2	2017
SSDS MK 2 MOD 3C / 1C - LHD 2 / CVN 72 ACB12 / TI12 - FSIT 3 / FQT 1/2	1	2016	3	2016
SSDS MK 2 MOD 3C / 1C - LHD2 / CVN 72 ACB12 / TI12 - T&E - CSA @ WI	3	2016	3	2016
SSDS MK 2 MOD 3C / 1C - LHD 2 / CVN 72 ACB12 / TI12 - T&E - CST @ WALLOPS	4	2016	3	2017
SSDS MK 2 MOD 3C / 1C - LHD 2 / CVN 72 ACB12 / TI12 - T&E - LHD 2 CSSQT	3	2017	4	2017
SSDS MK 2 MOD 3C / 1C - LHD 2 / CVN 72 ACB12 / TI12 - T&E - CVN 72 CSSQT	4	2017	1	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SSDS MK2 MOD 6C - CVN 78 ACB12 / TI12 - T&E - SIT/ET/TRKEX @ WI	1	2016	3	2020
SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 - / SW DCTI 4	3	2016	2	2017
SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 - FSIT 4 / FQT 3	4	2016	4	2016
SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 -T&E - DT III J PHASE 2 / ET10 @ CVN 78	3	2017	2	2018
SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 - FSIT 5 / FQT 4	3	2017	4	2017
SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 -T&E CST #1 @ WI	4	2017	1	2018
SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 - TEST ANALYZE & FIX (TAAF)	4	2017	2	2020
SDTS - SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 - FCL RISK REDUCTION TRKEX / MSLEX	2	2018	3	2018
SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 - FSIT 6 / FQT 5	2	2018	3	2018
SDTS - SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 - T&E - DT/OT III J/PHASE 3/ ET09	4	2018	2	2019
SSDS MK 2 MOD 6C - CVN 78 ACB12 / TI12 - T&E - CST #2 @ WI	4	2018	4	2018
SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 - FSIT 7 / FQT 6	2	2019	3	2019
SSDS MK 2 MOD 6C - CVN 78 ACB12 / TI12 - T&E CSSQT	3	2019	4	2019
SSDS MK 2 MOD 6C - CVN 78 ACB12 / TI12 - T&E - CST #3 @ WI	3	2019	3	2019
SSDS MK 2 MOD 6C - CVN 78 ACB12/TI12 - FSIT 8 / FQT 7	2	2020	3	2020
SSDS MK 2 MOD 6C - CVN 78 ACB12 / TI12 - T&E - CST #4 @WI	3	2020	3	2020
SSDS MK 2 MOD 6C - CVN 78 ACB12 / TI12 - DT/OT III J PHASE 2/ ET10	3	2021	4	2021
SSDS MK 2 MOD 6C - CVN 78 ACB12 / TI12 - T&E - C2X	1	2022	2	2022
SSDS MK 2 MOD 6C - CVN 78 ACB12 / TI12 - T&E - JTFX	2	2022	2	2022
SSDS MK 2 MOD 3C /1E - LHD 6 / CVN 73 ACB12 / TI-12H /TI-16 - HW PDR	2	2016	2	2016
SSDS MK 2 MOD 3C /1E - LHD 6 / CVN 73 ACB12 / TI-12H /TI-16 - SRR / SFR	2	2016	2	2016
SSDS MK 2 MOD 3C / 1E - LHD 6 / CVN 73 ACB12 / TI-12H /TI-16 - IPR 1	4	2016	4	2016
SSDS MK 2 MOD 3C / 1E - LHD 6 / CVN 73 ACB12 / TI-12H /TI-16 - IPR 2	2	2017	2	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SSDS MK 2 MOD 3C / 1E - LHD 6 / CVN 73 ACB12 / TI-12H /TI-16 - IPR 4	2	2018	2	2018
SSDS MK 2 MOD 3C / 1E - LHD 6 / CVN 73 ACB12 / TI-12H /TI-16 - IPR 5	4	2018	4	2018
SSDS MK 2 MOD 3C - LHD 6 ACB12 / TI-12H - T&E - SIT / ET @ WI	3	2017	4	2017
SSDS MK 2 MOD 3C - LHD 6 ACB12 / TI-12H - FSIT / FQT	3	2017	4	2017
SSDS MK 2 MOD 3C / 1E - LHD 6 / CVN 73 ACB12 / TI-12H /TI-16 - IPR 3	4	2017	4	2017
SSDS MK 2 MOD 3C - LHD 6 ACB12 / TI-12H - T&E - T&E CST @ WI	1	2018	2	2018
SSDS MK 2 MOD 3C - LHD 6 ACB12 / TI-12H - TAAF	1	2018	4	2018
SSDS MK 2 MOD 1E - CVN 73 ACB12 / TI-16 - FSIT / FQT	1	2019	2	2019
SSDS MK 2 MOD 1E - CVN 73 ACB12 / TI-16 - TAAF	3	2019	4	2019
"SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC - STUDIES/ANALYSIS/Top Level Requirements	1	2016	3	2016
SSDS MK 2 MOD 1E - CVN 73 ACB12 / TI-16 - T&E - SIT / ET @ WI	1	2019	2	2020
SSDS MK 2 MOD 1E - CVN 73 ACB12 / TI-16 - T&E CST @ WI	2	2020	3	2020
SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC - SoS SRR	2	2016	3	2016
SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC - SoS SFR	4	2016	1	2017
SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC - IPR 1 - Rel 1 / Rel 2	2	2017	3	2017
SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC - IPR 2	4	2017	4	2017
SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC-FSIT/FQT REL 1	3	2018	4	2018
SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC-FSIT/FQT REL 2	4	2018	1	2019
SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC - T&E - REL 1 / 2 SIT / ET @ WI	4	2018	1	2019
SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC - T&E - REL 1 CST	2	2019	2	2019
SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC - TAAF	1	2019	3	2020
SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC - T&E - REL 2 CST	4	2019	4	2019
SSDS MK 2 FCLIP PHASE 2 / FTIIP / TFCA BDC - T&E - REL 2 CST -	4	2019	4	2019
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - ANALYSIS / TOP LEVEL REQ'T / CPP / COI	1	2016	1	2016

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 2178 / *QRCC*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - COMBAT SYSTEM REQUIREMENTS/ INTERFACE DOC (CSRD)	2	2016	2	2017
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - DRAFT RFP	3	2017	3	2017
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - FINAL RFP	4	2017	4	2017
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - SoS SRR / SFR 1	1	2018	1	2018
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - SoS SRR / SFR 2	4	2018	4	2018
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - CSEA CONTRACT AWARD	2	2019	2	2019
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - ELEMENT SRR / SFR	2	2019	2	2019
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - REL 1 SSR/PDR	3	2019	3	2019
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - ELEMENT SRR / SFR -	4	2019	4	2019
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - REL 1 T&E SIT/ET @WI	4	2019	1	2020
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - SS ECP CONTRACT AWARD	1	2020	1	2020
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - REL 1 FSIT / FQT	1	2020	1	2020
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - REL 2 SSR/PDR	4	2020	4	2020
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - IPR 1	2	2021	2	2021
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - IPR 2	2	2021	2	2021
SSDS MK 2 ACB 20 / EASR/ ERS / TI-22 - TAAF	2	2020	4	2021
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - REL 2 T&E SIT/ET @WI	4	2021	4	2021
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - REL 2 FSIT / FQT	1	2022	2	2022
SSDS MK 2 ACB 20 / EASR / ERS / TI-22 - TAAF	3	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy										Date: May 2017		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604755N / *Ship Self Def (Detect & Cntrl)*				Project (Number/Name) 3172 / *Joint Non-Lethal Weapons*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
3172: *Joint Non-Lethal Weapons*	35.621	4.806	4.177	5.177	-	5.177	2.990	3.056	3.122	3.185	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Develop non-lethal weapon systems in support of anti-terrorism/force protection missions. Technologies include, but are not limited to, ocular interrupters, ship entanglement systems, and audible hailing devices. Current efforts are focused on the Long-Range Ocular Interrupter (LROI), Hailing Acoustic Laser and Light Tactical System (HALLTS), and Maritime Vessel Stopper(MVS). The LROI is intended to provide the U.S. Navy with the capability to deliver a bright light producing a dazzling or glare effect on a closing target to warn and/or suppress potential threats through increasing levels of visual degradation. The planned LROI will generate controlled, high-intensity output, providing warning and suppression effects. The extended range capability of LROI will effectively increase tactical decision-making time in support of escalation of force (EoF) tactics, techniques and procedures (TTP) across a broad range of military operations (ROMO). Further, the LROI will enhance Joint Force operations in assessing the intent of personnel and controlling the potential threat as early as possible.

HALLTS is a single-operator, man-portable, hailing and warning system developed to enhance the ability of security forces to effectively execute escalation of force procedures. HALLTS integrates three COTs, Navy-fielded non-lethal devices, consisting of an acoustic loud-hailing device, a high intensity white light and a dazzling green beam laser, using a common system controller and common mounting options. HALLTS reduces the manpower requirements for operation of multiple non-lethal devices and enhance the execution of escalation of force procedures.
MVS technologies are means of defending against small, attacking vessels while utilizing methodologies designed to incapacitate personnel or materiel while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment. MVS technologies are being studied with consideration for the defense of U.S. Navy personnel, material, and operations.

Develop Visual Augmentation Systems (VAS) in support of expeditionary / anti-terrorism / force protection missions. Technologies include, but are not limited to: image intensification devices, thermal imaging systems, and laser systems. Current efforts are focused on the M2HB/M2A1 Weapon Sight (M2WS), VAS Integration within the Advanced Bomb Suit Helmet, Visible and Infrared Portable Imager and Recorder (VIPIR), and AN/PVS-31B (White Phosphor) Wide Field of View Goggle. The purpose of the M2WS program is to provide an advanced day/night crew-served weapon sight capability to surface and expeditionary Navy personnel. The M2WS will provide for increased target detection ranges as well as provide for improved firing accuracy to minimize the number of rounds required to successfully hit the target.

Integration of VAS within the bomb suit helmet will allow EOD technicians freedom of movement to operate in low light level conditions with a modular sensor/display and will provide increased capability to clearly detect, locate, and identify explosive ordnance.

The VIPIR is a hand-held multi-spectral imaging system that provides situational awareness, allowing the user to detect and recognize potential threat craft at the maximum possible range so that Navy forces can assess nearby craft and engage appropriately. The VIPIR contains an integrated recording (video/audio) capability which is used to document the incident.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 3172 / *Joint Non-Lethal Weapons*

The AN/PVS-31B (White Phosphor) Wide Field of View Goggle (WFOV) provides the user with a lightweight/white phosphor goggle with an increased field of view (FOV) from 40 degrees to 80 degrees. The increase in FOV provides the user with an additional 30% tactical advantage and improved situational awareness. The AN/PVS-31B WFOV enhances the user's capability during Close Quarters Combat (CQC) and Counter-IED threat identification/defeat missions.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Joint Non-Lethal Weapons Development	4.806	4.177	5.177	0.000	5.177
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Produce 8 LROI systems and complete developmental Technical Data Package (TDP). Performed a Military Utility Assessment (MUA) with NECC for LROI and HALLTS. Perform LROI engineering updates identified during NECC MUA. Initiate LROI program of record documentation and begin approval process. Receive HALLTS feedback from NECC fleet users and incorporate their input via ECPs. Complete MVS CDD and begin JCIDS process.					
FY 2017 Plans: Continue performing HALLTS engineering updates identified during fleet user feedback and assessment; and conduct test and evaluation. Complete the LROI program of record transition strategy. Continue to refine design requirements for LROI and HALLTS based on feedback from the MUA. Begin development effort of other emerging non-lethal technologies for Maritime Vessel Stopping and refine requirements and requirements documentation.					
FY 2018 Base Plans: Development of next generation LROI baseline and any additional engineering updates and issue RFP. Development of Maritime Vessel Stopping technologies. Issue RFP for HALLTS production contract to fully meet the fielding requirement of units to NECC. Additional Systems Engineering/Operational Test and Evaluation of M2WS production demonstration models (Phase II). Development of VIPIR system to replace the Long Range Thermal Video System due to obsolescence.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	4.806	4.177	5.177	0.000	5.177

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 3172 / *Joint Non-Lethal Weapons*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/8128: *NCW Forces Active*	0.000	5.744	6.235	-	6.235	7.805	7.805	7.961	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

The initial LROI systems are being designed, developed, and deployed as a Rapid Acquisition and will be transitioned to a Program of Record (PoR). A developmental Technical Data Package (TDP) will be developed as part of the Rapid Acquisition effort. The developmental TDP will be included in the Request for Proposal (RFP) to the industry to be further refined for a production-level TDP to be used for PoR. The RFP including the production-level TDP will be provided to the industry to solicit offers for the LRIP production and subsequently for full rate production for a total of 100 LROI systems to be fielded to NECC.
In FY16, initial HALLTS systems were developed and tested. These units will go through user assessment for their feedback. ECP will be performed to incorporate user inputs. The RFP, including the developmental TDP, will be provided to the industry to solicit offers for the LRIP production after refining the TDP and subsequently for full rate production for a total of 117 HALLTS systems to be fielded to NECC.

The development of the M2WS will occur through two separately funded phases. Phase I was funded in FY 2016/2017 and consists of developing Production Demonstration Models (PDM) that are in accordance with all Performance Specification (PSPEC) requirements. Phase II will provide low rate initial production representative units which comply with all system requirements and subsequently for full rate production for a total of 825 systems to be fielded to NECC.
Initial VIPIR systems will be developed and tested based on KPPs identified. These units will go through user assessment for their feedback. ECP will be performed to incorporate user inputs. The RFP, including the developmental TDP, will be provided to the industry to solicit offers for the LRIP production after refining the TDP and subsequently for full rate production for a total of 200 VIPIR systems to be fielded to NECC.

E. Performance Metrics

Successfully produce LROI systems, conduct Military Utility Assessment (MUA) with Navy Expeditionary Combat Command (NECC) sailors, and transition to a PoR.
Successfully conduct HALLTS testing and fielding to fleet users.
Successfully produce M2WS and VIPIR systems to support NECC mission requirements and transition to FRP within the VAS PoR. Successfully conduct testing and fielding to fleet users.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604755N / *Ship Self Def (Detect & Cntrl)*	Project (Number/Name) 3358 / *SSDS Training Improvement Program*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3358: *SSDS Training Improvement Program*	1.854	7.124	2.864	7.554	-	7.554	7.473	7.498	8.867	9.045	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The SSDS Total Ship Training Capability (TSTC) provides enhancements and upgrades to the training components within the combat system to address needs for increased training capability and functionality in conjunction with SSDS MK2 Advanced Capability Builds (ACB)/Fire Control Loop Improvement Project (FCLIP), Far-Term Interoperability Improvement Project (FTIIP), Task Force Cyber Awakening (TFCA) Boundary Defense Capability (BDC), and Technical Insertion efforts under PU 2178 (QRCC). These enhancements will address current and future training requirements by implementing new functionality to enable the individual warfighter through distributed battle group events to engage in more complex training requirements to support fleet required training certification events. Capability Development and integration are related to Self Defense, Underwater, Surface, and other warfare areas. Capability enhancements and upgrades include development of re-useable common components that can be leveraged by SSDS MK2 combat systems, and/or integration of re-usable common components developed by the TSTC/BFTT Program and AEGIS Advanced Training Domain (ATD)/TSTC Total Ship Training Capability (TSTC) projects to meet AEGIS combat system training requirements.

PU 3358 funds the development and/or integration of TSTC improvements into the SSDS MK2 ACB-12, FCLIP Phase 2/FTIIP / TFCA BDC, and ACB-20 / EASR / ERS (Enterprise Air Search Radar/Enterprise Radar Suite) baselines and TI-12/TI-16/TI-22 configurations. The integrated SSDS MK2 TSTC improvements will be included in the SSDS MK2 baseline documentation, testing and certification. The planning schedule for the SSDS MK2 baselines are documented in QRCC Project (PU 2178). The TSTC improvements encompass physical and functional upgrades to the existing SSDS MK2 onboard training capabilities and configuration implemented with Battle Force Tactical Trainer (BFTT). Planned TSTC improvements include integration with the SSDS MK2 TI-12/TI-16/TI-22 Open Architecture Computing Environment (OACE) for TSTC implementation.

TSTC provides realistic joint warfare training across the spectrum of armed conflict, realistic unit level team training in all warfare areas. TSTC provides ships' Commanding Officers and Battle Group/Battle Force Commanders with the ability to conduct coordinated realistic, high stress, combat system level team training as an integral part of the Afloat Training Organization, the Tactical Training Groups and C2F/C3F Fleet Synthetic Trainers (FSTs)/Live Virtual Constructive (LVC) exercises.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: SSDS Total Ship Training Capability	7.124	2.864	7.554	0.000	7.554
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 3358 / *SSDS Training Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
-Completed adaptation, integration, test and delivery of DBR simulation software (Phase 1) as part of SSDS MK2 ACB-12 / TI-12 for CVN78 in-port fire control loop training capability in support of CVN78 ship delivery to the Navy. - Initiated additional software modifications for integration of DBR simulation software (Phase 2) to support CVN78 underway training as part of the CVN78 SSDS MK2 ACB-12 / TI-12 baseline. - Started the incorporation of TSTC functional requirements into SSDS Integrated Combat System Requirements Documentation for the first FCLIP Phase 2 / FTIIP / TFCA BDC baseline with the initiation of system engineering and development of documentation to support System of Systems Requirements Review / Functional Review (SoS SRR/SFR), and Combat System element SRRs/SFRs. - Initiated development of requirements to support TSTC capability improvements to support tactical training requirements of SSDS ACB-20 / EASR / ERS. Investigate options to integrate of Full Motion Video capability to provide required realism/fidelity for Surface Warfare Training. -Initiated development of the requirements to support re-hosting Battle Force Tactical Training (BFTT) / Advanced Training Domain (ATD) capability into SSDS MK2 TI-16 Hardware. Developed a Concept of Integration (COI) paper that documents the system interface impacts for this re-host. - Continued supporting the development of Cooperative Engagement Capability (CEC) integrated training in support of Fleet Synthetic Training (FST). Supported analysis of test results and documenting the System of System performance for SSDS baselines. - Completed the development of a Tactical Data Link (TDL) Gateway software component for utilization within the Battle Force Tactical Training (BFTT) Family of Systems in support of Integrated Training with the MH-60R simulation capability provided with CV-TSC for CVN-78 and CVN-72. - FY16 includes additional funds to develop ESSM BLK 2 and Electronic Warfare shipboard integrated training systems upgrades, that are commensurate with the tactical upgrades.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 3358 / *SSDS Training Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue development of TSTC requirements into SSDS Integrated Combat System (ICS) for the first FCLIP Phase 2 / FTIIP / TFCA BDC baselines with the completion of the SSDS MK2 software specifications and development (Design, code, and integration test) and conduct of associated system / software design reviews. - Complete SoS requirements, functional allocation and interface requirements to support the TSTC capability improvements for tactical training requirements for the SSDS ACB 20 / EASR / ERS baselines. - Initiate requirements to support simulating real world environments within SSDS MK2 shipboard sensors for Anti-Access / Area Denial (A2AD) training. - Complete software modification, integration, test and delivery of DBR simulation as part of CVN 78 SSDS MK2 ACB-12 / TI-12 baseline for CVN78 in-port and underway fire control loop training capabilities in support of CVN78 CSSQT and deployment. - Continue development of re-hosting Battle Force Tactical Training (BFTT) / Advanced Training Domain (ATD) capability into SSDS MK2 TI-16 Hardware. Develop functional requirements and preliminary design in support of installation on CVN-73 and future baselines. - Continue supporting the development of Cooperative Engagement Capability (CEC) integrated training in support of Fleet Synthetic Training (FST). Support phase 2 (Surface CU's) CEC Interim Training Capability (CIT). -Develop ESSM BLK 2 and Electronic Warfare shipboard integrated training systems upgrades, that are commensurate with the tactical upgrades. ***FY 2018 Base Plans:*** - For the SSDS MK2 ACB-20 Baseline, initiate the development of the requirements to support ESSM Block 2 simulation increased capability against closely spaced objects, and stream raids. Provide 2T uplink simulation that provided continuous targeting data to synthetic ESSM missile through intercept. - For the SSDS MK2 ACB-20 Baseline, initiate the development of the requirements to provide training for integrated and optimized employment of decoys, Electronic Attack (EA), and hard kill and soft kill weapons					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 3358 / *SSDS Training Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
effects against emerging threats. Provide the capability to support training with Soft Kill Coordination, EW Battle Management, and AOEW. - Continue development of re-hosting Battle Force Tactical Training (BFTT) / Advanced Training Domain (ATD) capability into SSDS MK2 TI-16 Hardware. Develop final design and begin implementation in support of installation on CVN-73 and future baselines. - Continue supporting the development of Cooperative Engagement Capability (CEC) integrated training in support of Fleet Synthetic Training (FST). Support phase 3 (CEC Tactical Software Full Training Support) CEC Interim Training Capability (CIT). - Continue requirements to support simulating real world environments within SSDS MK2 shipboard sensors for Anti-Access / Area Denial (A2AD) training. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	7.124	2.864	7.554	0.000	7.554

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE/0204571N/1427: *Surface Tactical Team Trainer (PU 1427)*	9.857	12.289	15.274	-	15.274	15.387	15.454	13.541	11.153	Continuing	Continuing
• RDTE/0604307N/3357: *AEGIS Training Improv. Prog. (PU 3357)*	14.624	10.458	7.856	-	7.856	6.609	5.130	5.249	5.355	Continuing	Continuing

Remarks

D. Acquisition Strategy

For the SSDS MK2 software development, including the integration of TSTC software improvements and the TI-16 Open Architecture Computing Environment, the acquisition strategy identified for SSDS MK2 for QRCC Project (PU 2178) (R-2A exhibit) applies.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604755N / *Ship Self Def (Detect & Cntrl)*	**Project (Number/Name)** 3358 / *SSDS Training Improvement Program*

E. Performance Metrics

Performance metrics for SSDS MK2 for QRCC Project (PU 2178) apply (R-2A exhibit). The milestones identified in the R-4A exhibit for PU2178 apply for the CVN78 SSDS MK2 ACB-12 / TI-12 baseline development and the integration of the DBR simulation software to provide CVN78 in-port and underway fire control loop training capabilities. The milestones for implementation of TSTC improvements into future SSDS MK2 ICS baselines for the SSDS MK2 FCLIP Phase 2 / FTIIP / TFCA BDC, and ACB-20 / EASR / ERS baselines in QRCC Project (PU 2178) apply and are listed in the R-4A exhibits for PU 3358.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604756N *I Ship Self Def (Engage: Hard Kill)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	744.397	93.481	114.475	212.412	-	212.412	211.957	120.136	105.305	105.241	Continuing	Continuing
0167: *5in Rolling Airframe Missile*	218.423	23.769	18.100	41.178	-	41.178	26.714	22.383	6.465	4.321	Continuing	Continuing
0173: *NATO Sea Sparrow*	520.139	65.177	90.256	134.205	-	134.205	110.674	79.299	80.927	82.548	Continuing	Continuing
0243: *ALaMO*	0.000	0.000	5.759	26.175	-	26.175	25.128	0.000	0.000	0.000	0.000	57.062
2070: *OTH Missile*	0.000	0.000	0.000	0.000	-	0.000	31.400	0.000	0.000	0.000	0.000	31.400
9081: *Phalanx CIWS SEARAM*	5.835	0.963	0.360	10.854	-	10.854	18.041	18.454	17.913	18.372	Continuing	Continuing
9999: *Congressional Adds*	0.000	3.572	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.572

A. Mission Description and Budget Item Justification

This program element provides funding for the development of systems that fulfill a portion of the third phase of the Ship Self Defense: Engage Hard Kill. Development in this line will focus on hard kill capabilities in which missiles are used to intercept incoming Anti-Ship Cruise Missiles (ASCM). Missile and system improvements necessary to meet their requirements are being addressed via NATO SEASPARROW Missile System (NSSMS) (0173), Rolling Airframe Missile (RAM) (0167), Advanced Low Cost Munition Ordnance (ALaMO), Over-The-Horizon (OTH) missile (2070), and Phalanx Close-In Weapon System (CIWS) SeaRAM (9081). Missile improvements include improved kinematic performance plus advanced seeker and low elevation fusing/warhead capability improvements. CIWS System improvements include Technology Refresh for current fleet population and Next Generation CIWS for the future fleet. New system developments include integration of Griffin missile into Patrol Coastal (PC) and Littoral Combat Ship Missile Module, and development and/or qualification of shoulder launched missile system. ALaMO (0243) qualifies a guided 57mm projectile with an active seeker for United States Navy (USN) use. ALaMO provides enhanced lethality against Fast In-shore Attack Craft (FIAC) when compared to existing 57mm ammunition.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604756N *I Ship Self Def (Engage: Hard Kill)*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	86.811	114.475	196.008	-	196.008
Current President's Budget	93.481	114.475	212.412	-	212.412
Total Adjustments	6.670	0.000	16.404	-	16.404
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	9.800	0.000			
• SBIR/STTR Transfer	-3.130	0.000			
• Program Adjustments	0.000	0.000	48.401	-	48.401
• Rate/Misc Adjustments	0.000	0.000	-31.997	-	-31.997

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2016	FY 2017
Project: 9999: *Congressional Adds*		
Congressional Add: *Shield Protection*	3.572	0.000
Congressional Add Subtotals for Project: 9999	3.572	0.000
Congressional Add Totals for all Projects	3.572	0.000

Change Summary Explanation

Project 0173 NATO Seasparrow - Increase is to support ESSM Block 2 Engineering and Manufacturing Development (E&MD). The plan for this effort was more heavily funded by international funds in prior years, with the US portion of funding being higher in the latter years. The image in the R4 exhibit details this graphically. Stalker supports Improved Stalker (I-Stalker), which will provide incremental improvements to the currently fielded Stalker Long Range Electro-Optic Sensor System (SLREOSS) in response to a 2016 United States Fleet Forces Command (USFFC) Operational Needs Statement (ONS).

Project 0167 RAM - Increase is to support RAM Block 2B Raid Engineering Change Proposal (ECP). The RAM Block 2B Raid ECP will provide an upgraded seeker and Missile-to-Missile Link (MML) capability to counter emerging complex raid threats. FY 2018 increase is also for implementation of RAM changes identified in the Integrated Combat System Failure Review Board (CSFRB) report known as the Fire Control Loop Improvement Project (FCLIP). These funds support RAM systems engineering, design analysis and testing of the combat system in support of the FCLIP Phase I process. Funding will deliver software baseline changes to the RAM Block 2 missiles, launcher software updates and updated interface to the combat system. Increase also funds implementation of FCLIP Phase II with Ship Self Defense System (SSDS) combat system improvement efforts that are key to air defense survivability. This issue completes the Fire Control Loop Improvement (FCLIP) developmental efforts and installs FCLIP fixes onto the ships. Addresses current capability gaps to improve overall

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604756N *I Ship Self Def (Engage: Hard Kill)*

Probability of Raid Annihilation (PRA) as identified during Failure Review Board (FRB) following A5-1 test event. Funding closes these gaps by implementing FRB-identified fixes which improve PRA.

Project 9081 CIWS SEARAM - Increase is to support CIWS Tech Refresh to eliminate legacy parts that are difficult and costly to maintain, reduce required maintenance actions, increase system reliability, and provide upgraded capability for the Fleet.

Project 0243 ALaMO - Increase is to support non-recurring engineering, design verification testing, environmental qualification, hazard classification, insensitive munitions and developmental testing starting in FY 2018.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	Project (Number/Name) 0167 / *5in Rolling Airframe Missile*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0167: *5in Rolling Airframe Missile*	218.423	23.769	18.100	41.178	-	41.178	26.714	22.383	6.465	4.321	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The RAM program is an international cooperative program with the government of the Federal Republic of Germany. The purpose of this program is to develop, test, and field a surface-to-air self-defense system utilizing a dual mode, passive radio frequency/infrared RAM. The baseline system RAM Block 0/1/1A provide defense capability against active and passive anti-ship missiles, very low altitude missiles, and maneuvering missiles through the utilization of passive radio frequency and infrared seekers and a maritime optimized fuse. The RAM Block 2 upgrade programs are a cooperative requirement of the U.S. and Federal Republic of Germany, as agreed to in an international Memorandum of Understanding (MOU), and allows RAM to counter emerging, highly maneuverable ASCM threats utilizing advanced seekers while maintaining all the proven capabilities of RAM Block 0/1/1A's accurate terminal guidance, proven lethality, and no shipboard post launch dependence. Funding supports formal Developmental and Operational Testing (DT/OT) scheduled through FY 2018, data analysis, operational/test driven studies, support of combat system performance analysis, identification of operationally relevant improvements. The RAM BLK 2A Fire Control Loop Improvement Project (FCLIP) will provide software only modifications to the missile and launcher to improve raid performance. The RAM BLK 2B Raid ECP will provide an upgraded seeker and Missile-to-Missile Link (MML) capability to counter emerging complex raid threats. Development and test of RAM BLK 2B Raid ECP will occur through FY 2022.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Rolling Airframe Missile Block 2 Development and Test	23.663	17.992	41.068	0.000	41.068
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Funded completion of Integrated Operational Test & Evaluation (OT&E) (Development and Operational) IT-C2 (Multi-target raids) testing, analysis, incorporation of any changes and associated efforts to support a FRP decision. Funds also supported RAM systems engineering, design analysis and testing of the combat system changes in support of the FCLIP process. RAM supported the SSDS Combat System (CS) in the FCLIP Phase II System Requirements Review (SRR) and System Functional Review (SFR). Funding delivers software baseline changes to the RAM Block 2 Missiles, launcher software updates and updated interface to the combat system. Funds supported additional engineering efforts to transition from gap analysis/system requirements generation and simulation environment updates. FCLIP Phase I-Preliminary Design completes with the System Specification Review (SSR)/System Requirements Review (SRR) and Preliminary Design Review (PDR) in FY					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0167 / *5in Rolling Airframe Missile*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
2016. Commenced development of the Missile-to-Missile Link (MML) component of RAM BLK 2 Raid ECP to verify Over-The-Air (OTA) functionality. ***FY 2017 Plans:*** Funds ongoing Integrated OT&E (Development and Operational) OT-C5 (Probability of Raid Annihilation, PRA, Testbed) testing, analysis, testbed accreditation, incorporation of any changes and associated efforts to support a FRP decision (2018). Funds also support RAM Systems Engineering, design analysis and testing of the combat system changes in support of the Fire Control Loop Improvement Project (FCLIP) process. In support of the FCLIP upgrade process, funding will deliver an updated RAM Block 2 software baseline changes to the Missile, Launcher, and Interface protocols to the combat system to support FCLIP Phase II PDR. With the completion of RAM system FCLIP Phase I Preliminary Design Review (PDR) in FY 2016, the project will transition into the detailed design, preliminary integration, and prototyping phase leading to Critical Design Review (CDR) in 3rd QTR FY 2017. Funds will support system engineering project efforts culminating in a Formal Qualification Test (FQT) Technical Data Review in 1st quarter FY 2018. ***FY 2018 Base Plans:*** Funds completion of Integrated OT&E (Development and Operational) OT-C5 (Probability of Raid Annihilation, PRA, Testbed) testing, analysis, testbed accreditation, incorporation of any changes and associated efforts to support a FRP decision (2018). Funds continued design, integration, and test of the FCLIP combat system changes. Funds support conducting FCLIP development flight test and final verification and qualification testing as well as transition to production. Funding for RAM BLK 2 Raid ECP will support preliminary design work, development and delivery of prototype designs and verification testing with a PDR and MML prototype demonstration test both in 2nd QTR FY 2018. The Raid ECP CDR will occur in 3rd QTR FY 2019. Funds will also support hardware procurement in FY 2018 for proof of manufacturing flight testing in FY 2020 due to long lead materials. A FCLIP Phase II CDR will occur in FY 2018. ***FY 2018 OCO Plans:*** N/A					
Title: Rolling Airframe Missile Block 2 Travel	0.106	0.108	0.110	0.000	0.110
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0167 / *5in Rolling Airframe Missile*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Funded program office travel to support program/testing as required by program schedule and in accordance with travel reduction mandate. ***FY 2017 Plans:*** Funds program office travel to support program/testing as required by program schedule and in accordance with travel reduction mandate. ***FY 2018 Base Plans:*** Funds program office travel to support program/testing as required by program schedule and in accordance with travel reduction mandate. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	23.769	18.100	41.178	0.000	41.178

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• WPN 2242: *RAM*	75.354	95.557	58.587	-	58.587	59.009	60.461	72.924	83.202	Continuing	Continuing
• OPN 5231: *Ship Missile Support Equipment*	9.779	8.175	7.800	-	7.800	10.425	7.552	9.529	3.052	Continuing	Continuing

Remarks

D. Acquisition Strategy

The RAM Program uses directed sole source contracts with Raytheon Missile Systems Company, Tucson, AZ.

E. Performance Metrics

Successfully complete DT/OT.
Achieved Initial Operational Capability (IOC) decision and support a FRP decision.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0167 / *5in Rolling Airframe Missile*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 2 Upgrade	C/CPAF	Various : Various	154.650	0.000		0.000		0.000		-		0.000	0.000	154.650	-
Primary Hardware Dev/Blk 1	Various	Various : Various	10.081	0.000		0.000		0.000		-		0.000	0.000	10.081	-
FCLIP	WR	PHD : CA	0.125	0.068	Mar 2016	0.000		0.128	Nov 2017	-		0.128	0.000	0.321	-
FCLIP	SS/CPFF	AECOM : VA	0.000	0.232	Dec 2015	0.374	Feb 2017	0.244	Dec 2017	-		0.244	0.000	0.850	-
Raid ECP	SS/CPFF	Raytheon : Tucson/ Louisville	0.000	9.969	Sep 2016	4.659	Feb 2017	26.785	Dec 2017	-		26.785	0.000	41.413	-
FCLIP	SS/CPFF	Raytheon : Tucson/ Louisville	9.607	12.184	Jan 2016	11.250	Nov 2016	6.960	Dec 2017	-		6.960	0.000	40.001	-
Raid ECP	SS/CPFF	JHU/APL : MD	0.000	0.000		0.450	Dec 2016	0.458	Dec 2017	-		0.458	0.000	0.908	-
FCLIP	WR	China Lake : CA	1.225	0.485	Mar 2016	0.000		0.793	Nov 2017	-		0.793	0.000	2.503	-
Raid ECP	WR	China Lake : CA	0.000	0.000		0.245	Jan 2017	0.250	Nov 2017	-		0.250	0.000	0.495	-
FCLIP	SS/CPFF	JHU/APL : MD	0.118	0.118	Mar 2016	0.140	Feb 2017	0.143	Nov 2017	-		0.143	0.000	0.519	-
Raid ECP	WR	PHD : CA	0.000	0.000		0.100	Feb 2017	0.102	Nov 2017	-		0.102	0.000	0.202	-
Raid ECP	SS/CPFF	AECOM : VA	0.000	0.000		0.126	Feb 2017	0.306	Dec 2017	-		0.306	0.000	0.432	-
Raid ECP	SS/FFP	Raytheon : Tucson	0.000	0.000		0.000		4.000	Dec 2017	-		4.000	0.000	4.000	-
		Subtotal	175.806	23.056		17.344		40.169		-		40.169	0.000	256.375	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Studies and Analysis	Various	Various : Various	1.210	0.000		0.000		0.000		-		0.000	0.000	1.210	-
		Subtotal	1.210	0.000		0.000		0.000		-		0.000	0.000	1.210	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	Project (Number/Name) 0167 / *5in Rolling Airframe Missile*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Support	C/CPFF	Raytheon : Tucson	16.739	0.397	Nov 2015	0.153	Nov 2016	0.549	Nov 2017	-		0.549	0.000	17.838	-
Test Support	WR	China Lake/PHD : CA/CA	12.300	0.100	Nov 2015	0.245	Nov 2016	0.200	Oct 2017	-		0.200	Continuing	Continuing	Continuing
FOT&E	WR	China Lake : PHD, CA	4.701	0.000		0.000		0.000		-		0.000	0.000	4.701	-
Miscellaneous	Various	Various : Various	5.765	0.000		0.000		0.000		-		0.000	0.000	5.765	-
Test Support	SS/CPFF	JHU/APL : MD	0.357	0.110	Mar 2016	0.250	Dec 2016	0.150	Nov 2017	-		0.150	0.000	0.867	-
		Subtotal	39.862	0.607		0.648		0.899		-		0.899	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Allot	Program Office : VA	1.398	0.106	Oct 2015	0.108	Oct 2016	0.110	Oct 2017	-		0.110	Continuing	Continuing	Continuing
Defense Acquisition Workforce Development Fund	Various	various : various	0.147	0.000		0.000		0.000		-		0.000	0.000	0.147	-
		Subtotal	1.545	0.106		0.108		0.110		-		0.110	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	218.423	23.769		18.100		41.178		-		41.178	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0167 / *5in Rolling Airframe Missile*

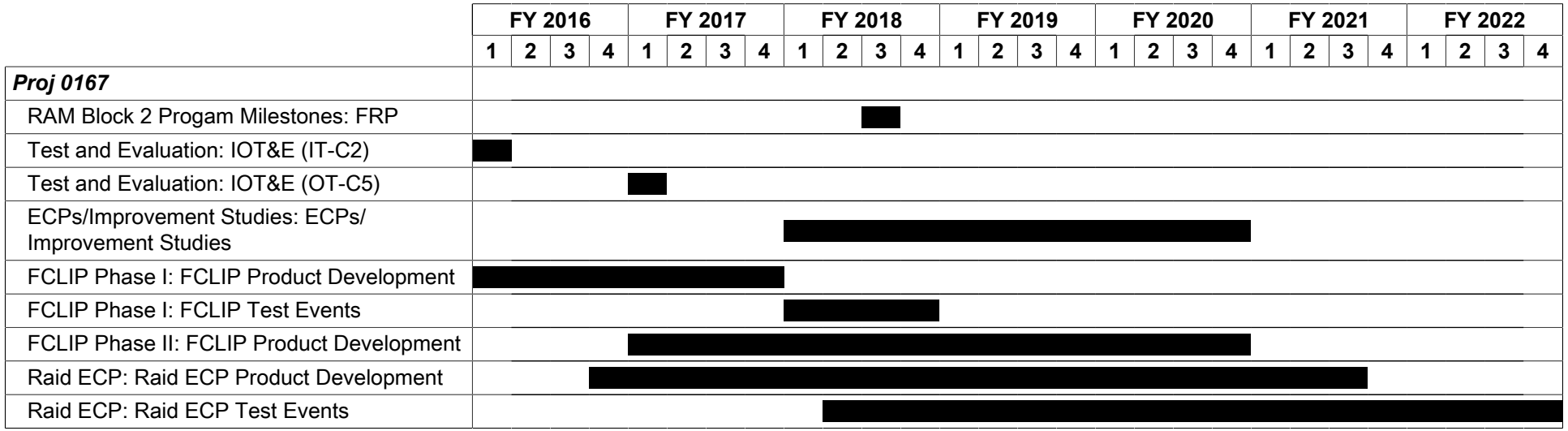


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0167 / *5in Rolling Airframe Missile*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0167				
RAM Block 2 Progam Milestones: FRP	3	2018	3	2018
Test and Evaluation: IOT&E (IT-C2)	1	2016	1	2016
Test and Evaluation: IOT&E (OT-C5)	1	2017	1	2017
ECPs/Improvement Studies: ECPs/Improvement Studies	1	2018	4	2020
FCLIP Phase I: FCLIP Product Development	1	2016	4	2017
FCLIP Phase I: FCLIP Test Events	1	2018	4	2018
FCLIP Phase II: FCLIP Product Development	1	2017	4	2020
Raid ECP: Raid ECP Product Development	4	2016	3	2021
Raid ECP: Raid ECP Test Events	2	2018	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	Project (Number/Name) 0173 / *NATO Sea Sparrow*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0173: *NATO Sea Sparrow*	520.139	65.177	90.256	134.205	-	134.205	110.674	79.299	80.927	82.548	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project encompasses four (4) primary efforts to enhance ship self defense:

1. Evolved SEASPARROW Missile (ESSM) Testing: A cooperative effort among 10 NATO SEASPARROW Nations and the U.S., to improve the capability of the SEASPARROW Missile to counter the low altitude, highly maneuverable ASCM threat. The program consists of evolving the SEASPARROW Missile through the development of a new rocket motor with tail control; thrust vector control and ordnance (warhead) upgrade; modifications to the MK 41 Vertical Launch System (VLS) to fire from a single cell with 4 ESSM (QuadPack); and modifications to the NATO SEASPARROW Surface Missile System (NSSMS) to provide ESSM capability.

2. NATO SEASPARROW Technical Direction Agent (TDA) - TDA support for the NSSMS Mk57 Mods 12-15 which is integrated with the Ship Self Defense System (SSDS) Mk 2 to provide ship missile defense utilizing an open architected design.

3. ESSM Block 2 Risk Reduction/ESSM Block 2 Engineering and Manufacturing Development (EMD): ESSM Block 2 upgrade is a cooperative effort between U.S Navy and NATO SEASPARROW Consortium Nations. ESSM Block 2 upgrade replaces the largely obsolete guidance section with a dual mode Active/Semi-Active X-Band seeker capable of defeating future threat capabilities within the existing envelope, including; smaller signatures, increased raid sizes, and adverse environments including countermeasures. Threat types include: advanced Anti-Ship Cruise Missiles (ASCMs), Anti-Ship Ballistic Missiles (ASBMs), surface and asymmetrical. The U.S. RDT&E funding accounts for 40% of the overall ESSM Block 2 Development Program. Year-to-year fluctuations in funding levels are due to the variations in contributions provided by the other Nations. Through FY 2016, the US has funded only 26% of the total effort, driving the US portion of the EMD annual cost to 60% in FY 2017 - FY 2020.

The overall consortium Block 2 budget is growing by 35% from FY 2017 to FY 2018. The US portion shows growth of 46% over this time frame due to the program phasing plan being more heavily funded by US in later years as well as other nations paying ahead of schedule, buying down their contribution in later years.

The increase from FY 2017 to FY 2018 is for the execution of DT flight tests, DT flight test analysis, OT flight test round build-up, TTP efforts, and the decrease in Non-US contributions.

4. Dual-Band Transceiver (DBT). The ESSM Block 2 missile will utilize a DBT for in-flight data communications. This two-way datalink enables control and management of the missile during flight. This DBT leverages the new DDG-1000/CVN-78 X-Band Transceiver (XBT) to incorporate the functions to support S-Band Aegis data link (i.e. a Dual Band Transceiver). This solves the S-band obsolescence issues and gives one common transceiver across the ESSM inventory.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0173 / *NATO Sea Sparrow*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Evolved Sea Sparrow Missile (ESSM) testing	1.300	2.880	5.000	0.000	5.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Conducted Aegis Baseline 9 firings in support of Aegis operational testing. Participated in LHA-6 operational test event DT-05R. Continued planning for Mk 29 Missile Launcher Upgrade (MLU) Testing and for ESSM Dual Band Transceiver testing.					
FY 2017 Plans: Begin integration testing on Zumwalt and CVN 78 Combat Systems installed on the Self Defense Test Ship. Begin live-fire testing on the Zumwalt Combat Systems on the Self Defense Test Ship. Participate in CVN 78 lead ship structural test firing planning and execution. Participate in LHD 2 and CVN 72 Combat System Ship Qualification Trial (CSSQT) planning and execution activities. Conduct ESSM Dual Band Transceiver live fire testing. Continue planning activities for Mk 29 Missile Launcher Upgrade testing. Test plan construction for ESSM Sea-Skimming guidance software improvement.					
FY 2018 Base Plans: Conduct Waterfront Integration Testing on DDG 1000 lead ship then conduct flight tests. Begin flight testing on the Self Defense Test Ship supporting CVN 78 and participate in the planning and execution of the ship's Combat System Ship Qualification Trial (CSSQT). Begin integration testing with Aegis ACB 16 and conduct flight tests. Conduct live fire event for LHD-2 and CVN-72 CSSQTs, testing the Objective Configuration Phase 2 upgrade. Conduct the risk reduction flight test supporting the Missile Launcher Upgrade (MLU). Conduct Near Miss Shock testing for MLU Launcher.					
FY 2018 OCO Plans: N/A					
Title: NATO Sea Sparrow Combat System Integraton Technical Direction Agent (TDA)	0.293	0.304	0.313	0.000	0.313
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued as TDA for the NSSMS system. Provided engineering support and support risk mitigation with the development of the solid state Mk 9 Tracker Illuminator System (TIS) power upgrade and digital receiver.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0173 / *NATO Sea Sparrow*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Serve as TDA to provide combat system support for Mk 57 activities. Participate in NATO SEASPARROW Program Steering Committee (NSPSC), Program Reviews, and NATO SEASPARROW International In-Service Engineering Network (NIISEN) activities as directed. Provide TDA expertise to review and, where authorized by NATO SEASPARROW Program Office (NSPO), independently assess and analyze requirements, assess upgrade options, evaluate compliance, and derive delta qualification testing/analysis requirements. ***FY 2018 Base Plans:*** Serve as TDA to provide combat system support for Mk 57 NSSMS activities. Participate in NSPSC, Program Reviews, and NIISEN activities as directed. Provide TDA expertise to review and where authorized by NSPO independently assess and analyze requirements, assess upgrade options (including Combat Systems optimization candidates for ESSM Block 2), evaluate compliance, and derive delta qualification testing/analysis requirements. Provide engineering support and support risk mitigation with the development of the solid state Mk 9 TIS (a component of the Mk 57 NSSMS) power upgrade and digital receiver. ***FY 2018 OCO Plans:*** N/A					
Title: Evolved Sea Sparrow Blk 2 Risk Reduction/ESSM Blk 2 EMD	61.238	86.012	124.094	0.000	124.094
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued maturing the ESSM Block 2 design during the EMD phase of the program focusing on Software (S/W) and Hardware (H/D) development. Completed 30 component design reviews and 4 incremental CDRs; initiated ground based testing, including Electromagnetic Environmental Effects (E3) planning, Computer in the Loop (CiL) and Hardware in the Loop (HiL) testing; initiated Captive Carry Flight test planning; continued maturation of the Models & Simulations supporting performance predictions; conducted initial warhead arena and Insensitive Munition (IM) tests; completed design modifications to the Mk 25 Canister; and initiated design of the new ESSM Block 2 shipping container. ***FY 2017 Plans:*** Continue maturing the ESSM Block 2 design during the EMD phase of the program focusing on S/W and H/D development. Conduct System Level Critical Design Review.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0173 / *NATO Sea Sparrow*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue maturing tactical flight code and Models & Simulations supporting performance predictions; execute Captive Carry Flight testing; continue ground based testing to include execution of Electromagnetic Environmental Effects (E3); execute two Control Test Vehicle (CTV) Flight tests; prepare H/W and S/W for Developmental Flight Testing; and prepare for Milestone C. ***FY 2018 Base Plans:*** Continue maturing the ESSM Block 2 design during the EMD phase of the program focusing on S/W and H/D development. Complete GTVs 1-3 flight test; Execute Milestone C review; Complete Development Testing (DT) Tactical S/W Build; Prepare for DT flight tests; prepare for Operational Flight Testing to include build-up of flight-test rounds; Transition to Production (TTP) efforts, prepare for Functional Configuration Audit. ***FY 2018 OCO Plans:*** N/A					
Title: Stalker Long Range System ***Articles:*** ***Description:*** Improved Stalker (I-Stalker) will provide incremental improvements to the currently fielded Stalker Long Range Electro-Optic Sensor System (SLREOSS) in response to a 2016 United States Fleet Forces Command (USFFC) Operational Needs Statement (ONS). SLREOSS was developed as a modular, portable, form/fit replacement for the NATO Sea Sparrow Missile System (NSSMS) MK 6 Low Light Level Television (LLLTV) in response to the 2010 Naval Forces Central Command (NAVCENT) Counter Swarm Urgent Operational Need (UON) to combat Fast Attack Craft/Fast Inshore Attack Craft (FAC/FIAC). It is currently being fielded in either the NSSMS MK6 MOD 3 LLLTV Director Mount configuration or NSSMS MK6 MOD 4 LLLTV Independent Mount configuration depending on platform specifications. I-Stalker will provide required upgrades to the SLREOSS Independent Mount configuration with the enhanced capabilities provided by the Navy owned Situational Awareness System (SAwS) to deliver an integrated radar and electro-optic/Infrared control and display suite. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:***	0.000 -	0.000 -	2.999 -	0.000 -	2.999 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0173 / *NATO Sea Sparrow*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Perform design and development of SAwS integration with Stalker (I-Stalker). Complete final design based on previous experimental efforts. Fabricate Engineering Developmental Model (EDM). Update software and perform design verification testing. ***FY 2018 OCO Plans:*** N/A					
Title: Dual Band Transceiver (DBT)	2.346	1.060	1.799	0.000	1.799
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Completed Proof of Design (POD) development for both ESSM Block 1 and ESSM Block 2 integration activities. Tasks included: successfully held the DBT incremental Critical Design Review (iCDR) on the hardware and software; continued with DBT Transition-To-Production (TTP) activities; conducted independent 3rd Party testing to validate S-Band and X-Band operation; began ESSM Block 1 and ESSM Block 2 integration activities (Hardware in the Loop (HiL) and ESSM Block 1 All Up Rounds (AUR) validation; began development of a Proof of Manufacturing (POM) Technical Data Package (TDP); and continued to support ESSM Block 2 and preparations for CDR. ***FY 2017 Plans:*** Develop POM hardware to support both ESSM Block 1 and ESSM Block 2 integration activities. Produce Production Representative Missile (PRM) hardware to support flight testing; plan for and execute POM integration and qualification testing; verify and validate Transition Section Computer (TSC) software; and begin Class 1 Engineering Change Proposal (ECP) development. Complete DBT TTP activities. Conduct DBT Production Readiness Review (PRR). Plan activities for Waterfront Integration Tests (WIT) and support Safety related reviews Weapon Systems Explosive Safety Review (WSESRB) and Software System Safety Technical Review Panel (SSSTRP) prior to flight testing. ***FY 2018 Base Plans:*** Complete DBT TTP activities; execute Waterfront Integration Tests (WIT) and support Safety related reviews Weapon Systems Explosive Safety Review (WSESRB) and Software System Safety Technical Review Panel (SSSTRP) prior to flight testing; analyze S-Band and X-Band flight test results; develop flight test reports; complete qualification events leading to ESSM Block 1 Class 1 ECP. ***FY 2018 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0173 / *NATO Sea Sparrow*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Accomplishments/Planned Programs Subtotals	65.177	90.256	134.205	0.000	134.205

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• WPN 2307: *ESSM*	37.671	107.397	74.524	1.768	76.292	99.433	125.513	218.927	295.154	Continuing	Continuing
• OPN 5231: *Ship Missile Defense*	41.850	38.597	50.606	-	50.606	50.239	30.338	30.851	31.569	Continuing	Continuing
• WPN 2307C: *ESSM AP*	54.462	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	54.462
• OMN 1D4D: *NATO Seasparrow*	24.659	18.090	32.507	-	32.507	47.287	20.408	20.926	21.352	0.000	515.887

Remarks

Stalker program also funded by OPN and OMN.
OPN funding for Stalker is captured above in LI 5231 - Ship Missile Defense line as follows: FY18: $5.668M, FY19: $10.598M.
OMN funding for Stalker is captured above in LI 1D4D - NATO Seasparrow line as follows: FY18: $1.8M, FY19: $2.7M.

D. Acquisition Strategy

ESSM is a directed sole source contract to Raytheon Missile Systems Company. The MK 29 ESSM Missile Launcher Upgrade (MLU) and Open architecture/Ship Self Defense System (SSDS) Integration effort is a directed sole source contract to Raytheon Company Integrated Defense System.

E. Performance Metrics

Successfully complete Developmental Test/Operational testing.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	Project (Number/Name) 0173 / *NATO Sea Sparrow*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ESSM Systems Engineering/Firing Spt	WR	Corona : CA	9.692	0.000		0.705	Oct 2016	0.705	Oct 2017	-		0.705	0.000	11.102	-
NATO OC System Engineering	C/ FFPLOE	Raytheon : RI	1.955	0.000		0.000		0.000		-		0.000	0.000	1.955	-
NATO OC - Software	C/ FFPLOE	Raytheon : RI	8.054	0.000		0.000		0.000		-		0.000	0.000	8.054	-
Stalker System Engineering	WR	NSWC Crane : IN	4.782	0.000		0.000		0.499	Jan 2018	-		0.499	0.000	5.281	-
Stalker Hardware Engineering	WR	NSWC Crane : IN	14.350	0.000		0.000		0.888	Jan 2018	-		0.888	0.000	15.238	-
Stalker Software Engineering	WR	NSWC Crane : IN	2.725	0.000		0.000		0.887	Jan 2018	-		0.887	0.000	3.612	-
ESSM Primary Hardware Development	C/CPAF	Raytheon : Tuscon	193.941	0.000		0.000		0.000		-		0.000	0.000	193.941	-
ESSM Ancillary Hardware	Various	Various : Various	71.324	0.000		0.000		0.000		-		0.000	0.000	71.324	-
ESSM Blk 2 EMD	C/CPIF	Raytheon : Tuscon	38.878	51.721	Oct 2015	73.641	Mar 2017	111.343	Oct 2017	-		111.343	0.000	275.583	-
ESSM Blk 2 Risk reduction	SS/ FFPLOE	Raytheon : Tuscon	44.150	0.000		0.000		0.000		-		0.000	0.000	44.150	-
NATO OC Systems Engineering SPT	WR	NSWC PHD : CA	0.700	0.000		0.000		0.000		-		0.000	0.000	0.700	-
Dual Band Tranceiver	SS/FFP	Raytheon : Tuscon	2.750	1.746	Feb 2016	0.460	Mar 2017	1.199	Oct 2017	-		1.199	0.000	6.155	-
		Subtotal	393.301	53.467		74.806		115.521		-		115.521	0.000	637.095	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NATO System TDA	SS/FP	APL : MD	2.192	0.293	Dec 2015	0.304	Dec 2016	0.313	Nov 2017	-		0.313	Continuing	Continuing	Continuing
NATO OC	SS/FFP	APL : MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Stalker -ISEA/TDA/RM&A	SS/FFP	various : various	0.750	0.000		0.000		0.000		-		0.000	0.000	0.750	-
ILS/Engineering Support	Various	Various : Various	15.543	0.000		0.000		0.000		-		0.000	0.000	15.543	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	Project (Number/Name) 0173 / *NATO Sea Sparrow*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ESSM Blk 2 EMD	WR	APL : MD	3.880	3.976	Nov 2015	4.095	Nov 2016	4.218	Oct 2017	-		4.218	0.000	16.169	-
ESSM Blk 2 EMD	WR	NAWC CL : CA	5.379	4.083	Nov 2015	5.742	Nov 2016	5.926	Nov 2017	-		5.926	0.000	21.130	-
ESSM Blk 2 EMD	Various	Various : Various	2.269	1.458	Jan 2016	2.532	Jan 2017	2.607	Nov 2017	-		2.607	0.000	8.866	-
NATO OC Support	WR	Dahlgren : VA	2.174	0.000		0.000		0.000		-		0.000	0.000	2.174	-
Dual Band Transceiver	WR	APL : MD	0.200	0.200	Feb 2016	0.200	Dec 2016	0.200	Dec 2017	-		0.200	0.000	0.800	-
Dual Band Tranceiver	WR	NAWC CL : CA	0.400	0.400	Feb 2016	0.400	Dec 2016	0.400	Dec 2017	-		0.400	0.000	1.600	-
		Subtotal	32.787	10.410		13.273		13.664		-		13.664	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ESSM Developmental Test & Evaluation	WR	NAWC CL : CA	21.845	0.000		0.204	Nov 2016	0.204	Oct 2017	-		0.204	Continuing	Continuing	Continuing
ESSM OPEVAL/ TECHEVAL/Test Firings	WR	Corona, IHD, Dahlgren, SNSWC, PHD) : various	18.118	0.000		0.285	Nov 2016	0.285	Nov 2017	-		0.285	0.000	18.688	-
ESSM Developmental Test & Evaluation	SS/FFP	APL : MD	5.782	0.000		0.100	Oct 2016	0.100	Oct 2017	-		0.100	Continuing	Continuing	Continuing
ESSM Test & Evaluation	C/CPAF	Raytheon : Tuscon	17.833	1.084	Feb 2016	1.000	Nov 2016	3.118	Nov 2017	-		3.118	Continuing	Continuing	Continuing
ESSM Test & Evaluation	WR	Dahlgren/PHD : VA/ CA	2.342	0.000		0.372	Nov 2016	0.372	Nov 2017	-		0.372	0.000	3.086	-
Developmental Test & Evaluation	WR	Dahlgren : VA	0.418	0.000		0.000		0.000		-		0.000	0.000	0.418	-
I-Stalker Development Test and Evaluation	WR	NSWC Crane : IN	0.000	0.000		0.000		0.500	Jan 2018	-		0.500	0.000	0.500	-
		Subtotal	66.338	1.084		1.961		4.579		-		4.579	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	Project (Number/Name) 0173 / *NATO Sea Sparrow*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ESSM-Support and Performing Activity	Allot	PHD/NAWC CL/ APL : CA/MD	14.763	0.116	Oct 2015	0.116	Oct 2016	0.116	Oct 2017	-		0.116	Continuing	Continuing	Continuing
ESSM-Travel	Allot	Program Office : VA	3.227	0.100	Oct 2015	0.100	Oct 2016	0.100	Oct 2017	-		0.100	Continuing	Continuing	Continuing
ESSM-Misc	Various	various : various	2.149	0.000		0.000		0.000		-		0.000	0.000	2.149	2.065
NATO Travel/Misc	Various	Program Office : various	2.111	0.000		0.000		0.000		-		0.000	0.000	2.111	-
Engineering Support	Various	Various : Various	5.458	0.000		0.000		0.000		-		0.000	0.000	5.458	-
I-Stalker Prgram Management Support	C/CPIF	TMB : Washington, DC	0.000	0.000		0.000		0.200	Jan 2018	-		0.200	0.000	0.200	-
Stalker Travel	WR	NAVSEA Program Office Travel : Washington, DC	0.005	0.000		0.000		0.025	Jan 2018	-		0.025	0.000	0.030	-
		Subtotal	27.713	0.216		0.216		0.441		-		0.441	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	520.139	65.177		90.256		134.205		-		134.205	-	-	-

Remarks

Various used for multiple vendors and location under threshold.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0173 / *NATO Sea Sparrow*

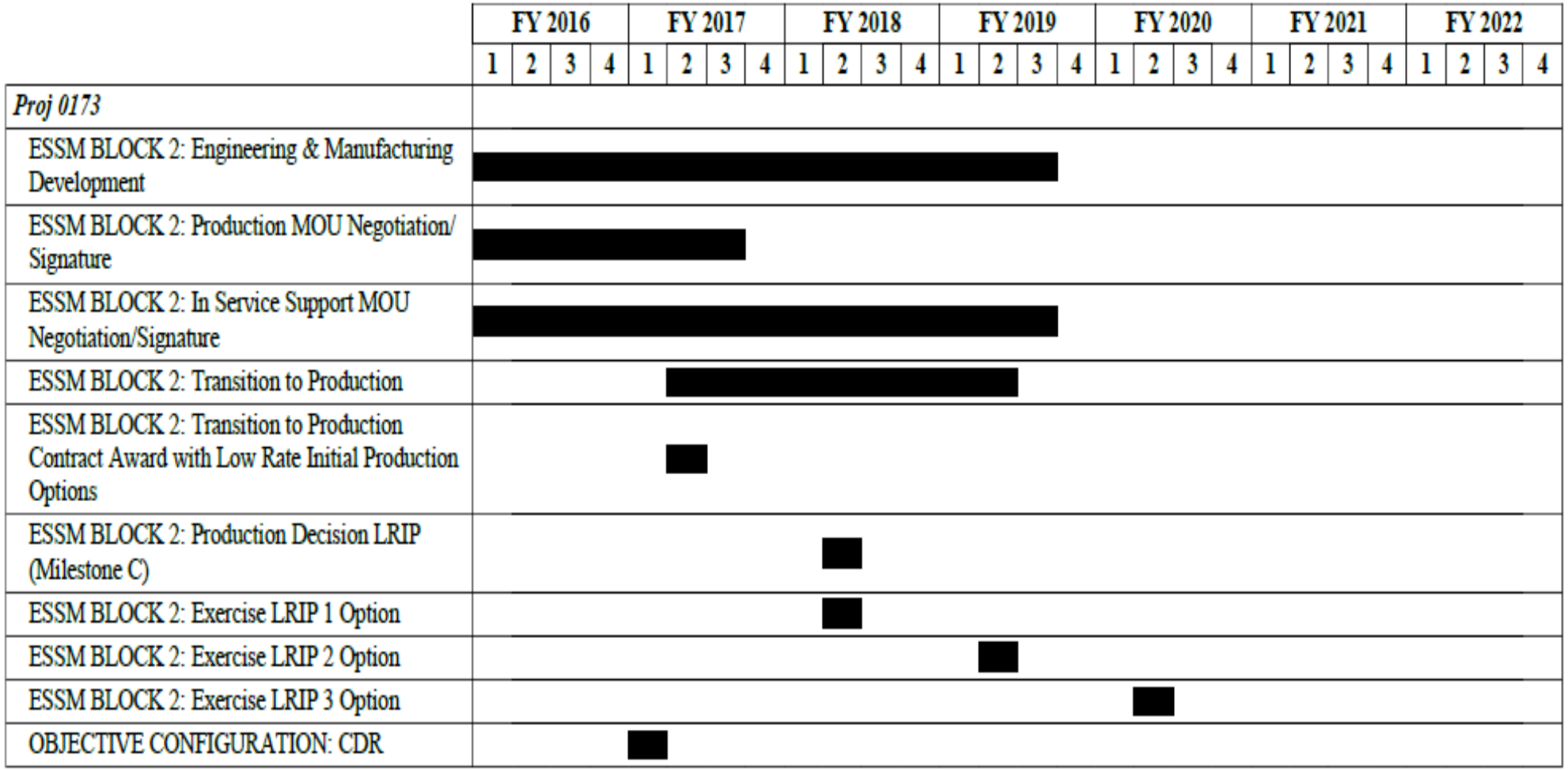
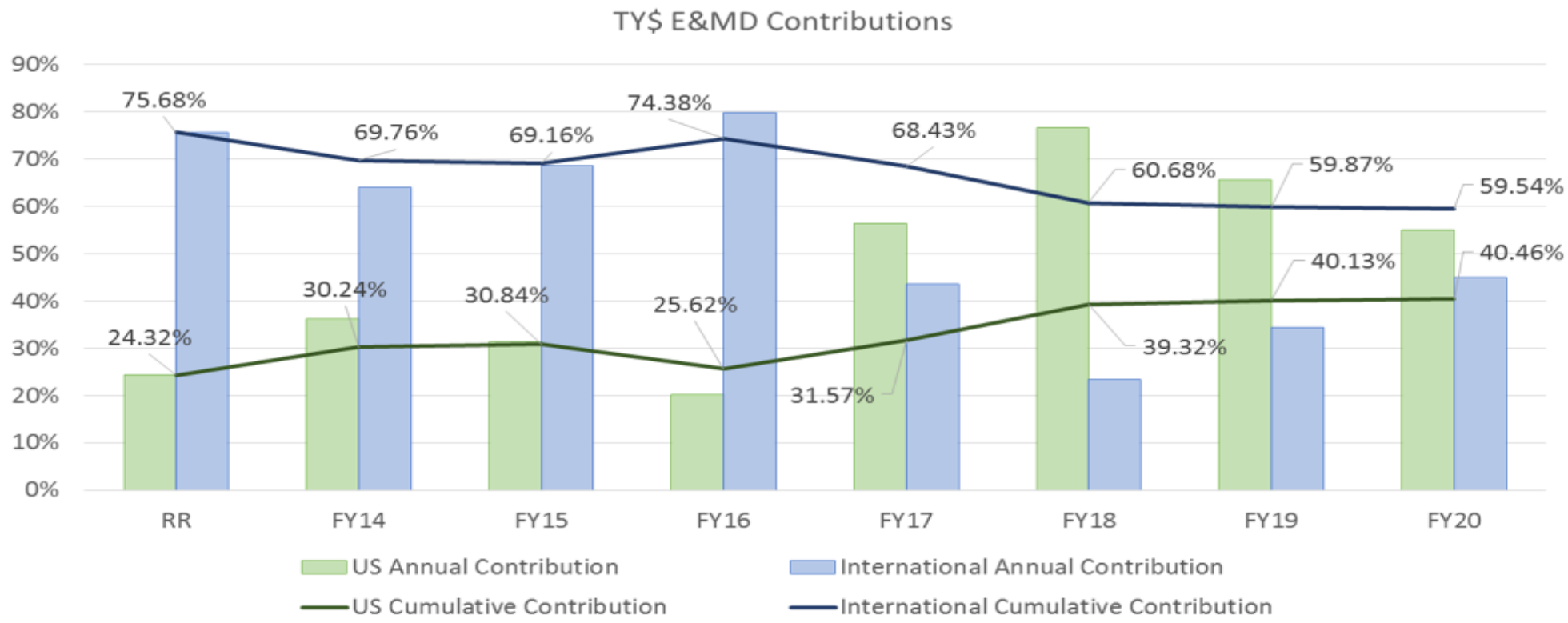


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0173 / *NATO Sea Sparrow*



Under the ESSM Block 2 Development Memorandum of Understanding (MOU), the US accounts for 40% of the total funding with the other Nations accounting for the remaining 60%. The program phasing plan was designed for heavy international/light US funding in the early years and light international/heavy US funding in the later years.

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0173 / *NATO Sea Sparrow*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0173				
ESSM BLOCK 2: Engineering & Manufacturing Development	1	2016	3	2019
ESSM BLOCK 2: Production MOU Negotiation/Signature	1	2016	3	2017
ESSM BLOCK 2: In Service Support MOU Negotiation/Signature	1	2016	3	2019
ESSM BLOCK 2: Transition to Production	2	2017	2	2019
ESSM BLOCK 2: Transition to Production Contract Award with Low Rate Initial Production Options	2	2017	2	2017
ESSM BLOCK 2: Production Decision LRIP (Milestone C)	2	2018	2	2018
ESSM BLOCK 2: Exercise LRIP 1 Option	2	2018	2	2018
ESSM BLOCK 2: Exercise LRIP 2 Option	2	2019	2	2019
ESSM BLOCK 2: Exercise LRIP 3 Option	2	2020	2	2020
OBJECTIVE CONFIGURATION: CDR	1	2017	1	2017
I-STALKER: I Stalker Development	1	2018	2	2019
I-STALKER: Development Testing	1	2019	2	2019
I-STALKER: EDM Delivery	2	2019	2	2019

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	Project (Number/Name) 0243 / *ALaMO*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0243: *ALaMO*	0.000	0.000	5.759	26.175	-	26.175	25.128	0.000	0.000	0.000	0.000	57.062
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The 57mm MK 332 HE-4G Projectile significantly increases MK 110 Gun Mount lethality and effectiveness against Fast Attack Craft and Fast In-Shore Attack Craft (FAC/FIAC). The 57mm ALaMO concluded development as part of a classified program and transitioned to qualification for Navy use in FY 2017. ALaMO will transition to production at the conclusion of the program.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Systems Engineering and Testing	0.000	5.759	26.175	0.000	26.175
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: - Procure long lead hardware for MK 332 design verification prototypes and begin initial planning for test events in FY 2018.					
FY 2018 Base Plans: - Procure balance of hardware for design verification and performance verification test assets. - Conduct MK 332 component and projectile design verification tests. - Conduct radar and divert mechanism performance verification tests from land based test sites. - Measure warhead fragmentation and conduct lethality modeling. - Perform safety and suitability environmental qualification tests. - Conduct the test planning for hazard classification and insensitive munitions qualification. - Coordinate the planning for FY 2019 land based and shipboard DT events. Begin planning IOT&E with Commander Operational Test & Evaluation Force (COMOPTEVFOR).					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	5.759	26.175	0.000	26.175

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0243 / *ALaMO*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

MK 332 HE-4G will be qualified for Navy use in FY 2019, supporting Low Rate Initial Production in FY 2020.

E. Performance Metrics

Quarterly Program Reviews and semi-annual Product Certification Panel Reviews.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0243 / *ALaMO*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Produce Design Verification hardware, DT Hardware	SS/CPIF	L3/ Mustang : Plano, Tx	0.000	0.000		5.000	Mar 2017	19.964	Jan 2018	-		19.964	19.044	44.008	-
		Subtotal	0.000	0.000		5.000		19.964		-		19.964	19.044	44.008	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Services	WR	NSWC, DD : Dahlgren, VA	0.000	0.000		0.419	Oct 2016	3.364	Oct 2017	-		3.364	3.100	6.883	-
Government Engineering Services	WR	NSWC, IHEODTD : Indian Head, MD	0.000	0.000		0.340	Oct 2016	2.847	Oct 2017	-		2.847	2.670	5.857	-
		Subtotal	0.000	0.000		0.759		6.211		-		6.211	5.770	12.740	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		5.759		26.175		-		26.175	24.814	56.748	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0243 / *ALaMO*

ALaMO Program Schedule

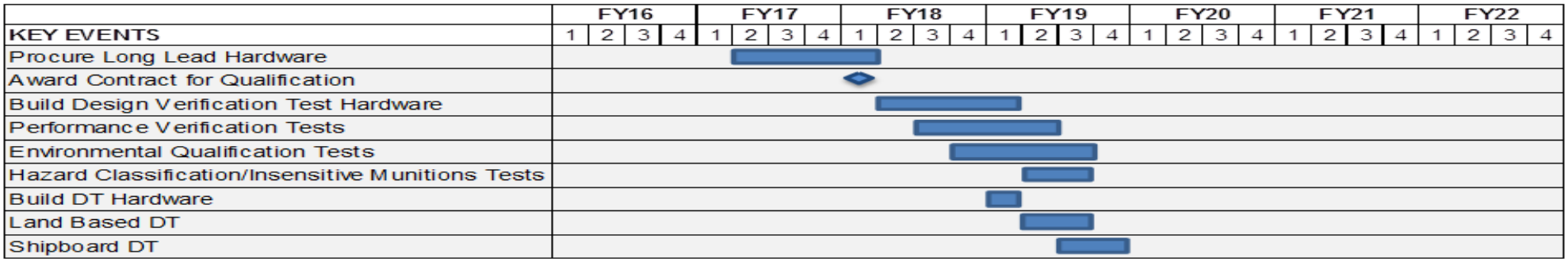


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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 0243 / *ALaMO*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0243				
Procure Long Lead Hardware	2	2017	1	2018
Award Contract For Qualification	1	2018	1	2018
Build Design Verification Test Hardware	2	2018	1	2019
Performance Verification Tests	3	2018	2	2019
Environmental Qualification Tests	4	2018	3	2019
Hazard Classification/Insensitive Munitions	2	2019	3	2019
Build DT Hardware	1	2019	1	2019
Land Based DT	2	2019	3	2019
Shipboard DT	3	2019	4	2019

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	Project (Number/Name) 2070 / *OTH Missile*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2070: *OTH Missile*	0.000	0.000	0.000	0.000	-	0.000	31.400	0.000	0.000	0.000	0.000	31.400
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

OTH Missile funds competitive acquisition, testing, and fielding of a modern, technologically mature Over-the-Horizon Weapon System (OTH-WS) surface to surface missile capability to be installed onto commissioned and in-production Littoral Combat Ship (LCS) beginning in FY 2021. This continues efforts begun in FY 2016 and FY 2017 Frigate PE 0603599N Project 3086. This is not a new start.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	Project (Number/Name) 9081 / *Phalanx CIWS SEARAM*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9081: *Phalanx CIWS SEARAM*	5.835	0.963	0.360	10.854	-	10.854	18.041	18.454	17.913	18.372	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The MK 15 Close-In Weapons System (CIWS) is a fast reaction, rapid fire, computer controlled radar system utilizing either a 20mm gun (Phalanx) or a SeaRAM weapon system (SeaRAM) to meet its primary mission of providing Anti-Ship Missile (ASM) defense. CIWS fleet population exceeds 220 systems onboard nearly every USN surface combatant. In addition, CIWS continues to be installed on new construction surface ships with life expectancies of 25+ years. Basic system architecture is 20+ years old, hasn't had a significant R&D development effort since the 1990's, and is in need of Technology Refresh in order to avoid hardware obsolescence, maintain/improve reliability, increase capability, and provide affordable spare parts to achieve acceptable Operational Availability for the next 20+ years. Technology Refresh development starts in FY 2018 and will be fielded during CIWS overhauls and will consist of three efforts: Electric Gun Drive System (EGDS), Electronics Enclosure Modernization (ELX), and Local Control Station and Remote Control Station (LCS/RCS) Redesign. EGDS will replace the current pneumatic gun drive system that is difficult and costly to maintain with an all-electric drive system. EGDS will reduce maintenance/troubleshooting requirements, reduce support costs, and provide capability increases such as variable firing rates and reduced ammunition expenditures. ELX replaces costly and obsolete 1970's technology circuit card assemblies, servo controllers and electronic drawer backplanes with COTS digital devices, integrated controllers, and efficient power converters. ELX also will provide a reduction in weight of approx 960 lbs and simplified maintainability. LCS/RCS Redesign eliminates expensive obsolete components, decreases maintenance requirements and complexity, increases commonality between the LCS and RCS via open architecture, and simplifies the user operation by reducing Human Machine Interface requirements.

SeaRAM CIWS is deployed onboard DDG 64, 71, 75, and 78 in order to provide additional capability to meet emerging threats. Efforts include development, qualification, and testing of software and hardware modifications in order to support fielding on these AEGIS class ships. The SeaRAM installation schedule on DDG is as follows: DDG 78 completed March 2016; DDG 64 completed July 2016; DDG 75 completed November 2016; DDG 71 completed March FY 2017.

CIWS Next Generation has been deferred to future years.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: CIWS Tech Refresh / SeaRAM on DDG Class	0.963	0.360	10.854	0.000	10.854
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Non-recurring engineering efforts for integration/fielding of SeaRAM CIWS onboard DDG 64, 71, 75, and 78.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 9081 / *Phalanx CIWS SEARAM*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Non-recurring engineering efforts for integration/fielding of SeaRAM CIWS onboard DDG 64, 71, 75, and 78. ***FY 2018 Base Plans:*** Non-recurring engineering efforts for CIWS Technology Refresh Modernization activities are focused on redesign of key subsystems, some of which date to the 1970s with obsolete and largely unsupportable electronics systems. Replacing these subsystems with modular "refreshed" components will reduce total ownership costs for the overall sustainment of the Phalanx system and provide a significant capability increase. - Electric Gun Drive System - $2M - Electronic Modernization - $7M - Local Control Station/Remote Control Station Redesign - $1.8M ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.963	0.360	10.854	0.000	10.854

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The MK 15 Close-In Weapons System (CIWS) is a fast reaction, rapid fire, computer controlled radar system utilizing either a 20mm gun (Phalanx) or a SeaRAM weapon system (SeaRAM) to meet its primary mission of providing Anti-Ship Missile (ASM) defense. Funding provides support for efforts related to Technology Refresh (for current fleet population) as well as efforts related to the integration/installation of SeaRAM CIWS in DDG 64, 71, 75, and 78. This work will be completed via sole source contracts to the CIWS Design Agent (Raytheon Missile Systems). Tech Refresh improvements will be fielded as Engineering Change Proposals (ECPs) and will be installed during CIWS overhauls or pierside.

E. Performance Metrics

Successfully complete trade studies and initial requirements definition for Technology Refresh and efforts related to successful integration/installation of SeaRAM CIWS in DDG class ships.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 9081 / *Phalanx CIWS SEARAM*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CIWS Tech Refresh	SS/CPFF	Raytheon Missile Systems : Tucson, AZ	4.435	0.000		0.000		0.000		-		0.000	0.000	4.435	4.435
SeaRAM CIWS on DDG Class	SS/CPFF	Raytheon Missile Systems: : Various	1.000	0.963	Nov 2015	0.360	Nov 2016	0.000		-		0.000	0.000	2.323	-
CIWS Tech Refresh	Various	Various : Various	0.400	0.000		0.000		10.854	Apr 2018	-		10.854	Continuing	Continuing	Continuing
		Subtotal	5.835	0.963		0.360		10.854		-		10.854	-	-	-

Remarks

CIWS Tech Refresh modernization activities are focused on redesign of key subsystems, some of which date to the 1970s with obsolete and largely unsupportable electronics systems. Replacing these subsystems with modular "refreshed" components will reduce total ownership costs and maintenance requirements for the overall sustainment of the Phalanx system.

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.835	0.963		0.360		10.854		-		10.854	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 9081 / *Phalanx CIWS SEARAM*

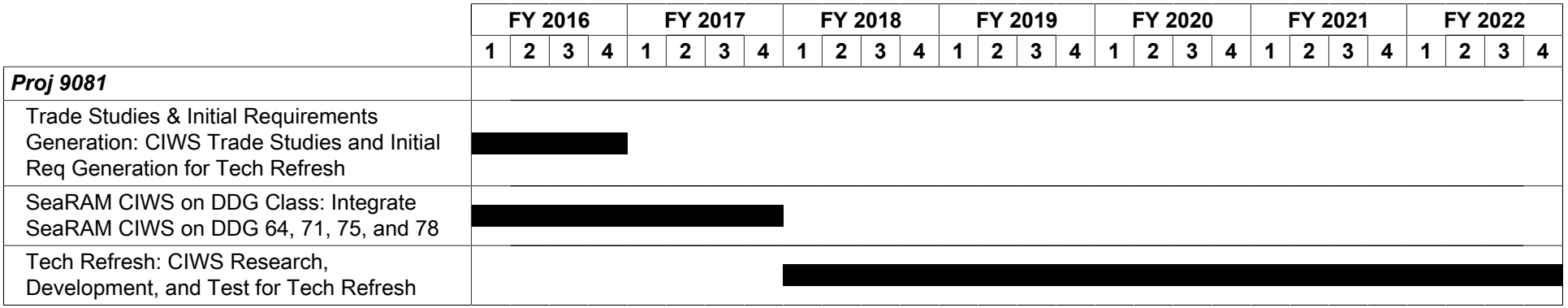


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	**Project (Number/Name)** 9081 / *Phalanx CIWS SEARAM*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9081				
Trade Studies & Initial Requirements Generation: CIWS Trade Studies and Initial Req Generation for Tech Refresh	1	2016	4	2016
SeaRAM CIWS on DDG Class: Integrate SeaRAM CIWS on DDG 64, 71, 75, and 78	1	2016	4	2017
Tech Refresh: CIWS Research, Development, and Test for Tech Refresh	1	2018	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604756N / *Ship Self Def (Engage: Hard Kill)*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	3.572	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.572
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The existing Crew Served Weapons Stations (CSWS) aboard CVN 68 class ships do not have ballistic shields installed. Commercially available ballistic shields do not meet the shipboard integration requirements or military levels of ballistic defeat. The Advanced Ballistic Protection for Crew Served Weapons Stations will provide protection for our sailors as they protect our ships. The system a comprised of a unique composite materials system that meets or exceeds the required ballistic protection while being able to withstand the uniquely harsh environment present on seaborne vessels.

A Small Business Innovation Research contract was competed and a Phase I contract awarded to three contractors to develop candidate designs. SBIR Phase II down-selected to one vendor: Kinetic Resolve (a service-disabled veteran-owned small business located in Stillwater, MN) and The Protective Group (TPG), a small business located in Miami Lakes, FL, collectively operating as Kinetic Protection, LLC. Phase II was awarded to generate proof of concepts for two mount locations on a selected carrier. A production decision will be made with a SBIR Phase III to roll the design out to CVNs and potentially to additional ship classes (ex. LCS, destroyers, etc.)

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017
Congressional Add: Shield Protection	3.572	0.000
FY 2016 Accomplishments: Provided engineering support for increased proof of concept fielding for the Advanced Ballistic Protection for Crew Served Weapons Stations		
FY 2017 Plans: N/A		
Congressional Adds Subtotals	3.572	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This work will be completed via SBIR contracts Phase III, sole source contracts to Kinetic Protection LLC, based on completion of tasking with SBIR II and bringing forth their proprietary data.

E. Performance Metrics

Successfully complete development of enhanced capability for the Advanced Ballistic Protection for two (2) Crew Served Weapons Stations (CSWS).

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604757N *I Ship Self Def (Engage: Soft Kill/EW)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	1,147.461	100.153	114.211	103.391	-	103.391	125.015	98.873	72.212	42.550	Continuing	Continuing
0954: *Shipboard EW Improvement Program*	474.207	10.478	13.322	16.013	-	16.013	16.332	16.413	16.766	17.101	Continuing	Continuing
2190: *NULKA Decoy*	63.683	1.854	1.934	4.181	-	4.181	4.115	5.259	5.407	7.560	Continuing	Continuing
3227: *SEWIP Block 2*	222.451	0.397	0.315	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	223.163
3316: *Advanced Offboard EW*	106.887	18.966	36.080	45.867	-	45.867	67.123	55.218	26.594	10.868	Continuing	Continuing
3321.: *SEWIP Block 3*	280.233	68.458	62.560	37.330	-	37.330	37.445	21.983	23.445	7.021	Continuing	Continuing

A. Mission Description and Budget Item Justification

0954 - The Surface Electronic Warfare Improvement Program (SEWIP) is segmented into Block 1A, Block 1B, Block 2, Block 3, and Soft Kill Coordination System (SKCS). Block 1A upgraded the AN/SLQ-32 pulse-processing computers and the display consoles allowing the system to more quickly identify threats and better display the information to the operator. Block 1B added adjunct sensors for special signal intercept, including Specific Emitter Identification (SEI), and High Gain High Sensitivity (HGHS) (Block 1B3), a critical improvement for the threat correlation, situational awareness, and extending the battle space. Block 2 enhanced Surface Electronic Warfare (EW) and provided improved Anti-Ship Missile Defense (ASMD) and situational awareness through an improved Electronic Support (ES) receiver, antenna, and combat system interface. The addition of Block 2 to Block 1B3 forms the AN/SLQ-32 (V)6. Block 3 will provide an enhanced electronic attack capability to improve ASMD and counter-targeting. The addition of Block 3 to AN/SLQ-32 (V)6 forms the AN/SLQ-32(V)7 system. EW Rapid Capability Insertion Process (RCIP) identifies system and mission capability gaps by analyzing EW baseline and fleet requirements, prioritizes those gaps based on fleet input and critical technology maturity, and develops upgrades to the AN/SLQ-32(V) product line to address those gaps. The SKCS will provide SK weapon coordination and enhanced situational awareness to the AN/SLQ-32 (V)6 with EW/radar track association to support SK engagement decisions, including Radar Cued Engagements (RCE) and Electronic Attack (EA) with both onboard EA, provided by AN/SLQ-32 (V)7, and off-board EA. RCIP also integrates Future Naval Capability (FNC) programs into SEWIP.

2190 - The Offboard Active Decoy (NULKA) is a joint cooperative program between the United States and Australia that developed an active offboard decoy that utilizes a broadband radio frequency repeater mounted atop a hovering rocket. NULKA is designed to counter a wide variety of present and future radar guided Anti-Ship Missiles (ASMs) by radiating a large radar cross section while flying a ship-like trajectory. The United States developed the electronic payload and fire control system, while Australia developed the hovering rocket. Future efforts involve development of the capability for high value unit protection.

3227 - SEWIP Block 2 is developing an upgraded antenna, receiver, and combat system interface for AN/SLQ-32. The upgrades are necessary in order to pace the threat, improving detection, accuracy, and mitigation of Electromagnetic Interference (EMI).

3316 - The Advanced Offboard EW (AOEW) program is for the development of long duration off-board decoys integrated with onboard systems for EW coordination to counter identified EW gaps (additional details classified) in response to an urgent operational need from the Fleet that has been approved by the CNO for execution. Currently no counter to the threat exists. The program began with a Rapid Response Effort (RRE) in FY12-15 and a Decoy Development Effort (DDE) culminating in

the delivery of a fully supported, full capability system. The RRE consisted of the evaluation and integration of commercially available decoys. The DDE consists of the development and evaluation of a long duration, active electronic offboard decoy system (payload only) integrated on an existing flight vehicle and an onboard/offboard EW coordinator fully able to counter the threat.

The AOEW Preliminary Design contract award shifted from June 2016 to December 2016. In order to deliver this capability to the fleet as soon as possible, Engineering Development Model (EDM) contract delivery requirements have been re-phased, which enables the program to reach Milestone C in FY20. The MH60R helicopter AOEW decoy EDM and hardware delivery, integration, and flight test requirements were de-coupled from that of the MH60S. The MH60R and MH60S were originally both scheduled to be integrated and flight tested in the same fiscal year, but the integration and flight testing of the MH60S has now been shifted to FY21.

In FY16 and FY17 AOEW includes a government software development effort to integrate AOEW into the Soft Kill Coordination System (SKCS) to gain maximum effectiveness from the AOEW decoy through coordination with on board systems.

DDE Preliminary Design contract was awarded in December 2016.

3321 - SEWIP Block 3 is developing an Electronic Attack (EA) capability improvement required for the AN/SLQ-32(V) system to keep pace with the threat. SEWIP Block 3 will provide the AN/SLQ-32(V)7 system for all surface ships (CVN, CG, DDG, LHD) outfitted with the active variant of the AN/SLQ-32, mainly the (V)3 and (V)4, as well as select new construction platforms.

The SEWIP Block 3 Acquisition leverages technology developed under the Office of Naval Research's (ONR) Integrated Topside (InTop) Science and Technology (S&T) effort. SEWIP Block 3 will continue to expand the integrated shipboard combat system by providing a new integrated EA transmitter, array, and associated EA techniques. The AN/SLQ-32(V)7 integrates the new EA countermeasure (SEWIP Block 3) with the AN/SLQ-32(V)6. The AN/SLQ-32(V)6 includes an Electronic Support(ES) receiver (SEWIP Block 2), a High Gain High Sensitivity (HGHS) receiver (SEWIP Block 1B3), a Specific Emitter Identifier (SEI) receiver (SEWIP Block 1B2), display console, and backend electronics. SEWIP Block 3 includes a government software development effort for a SoftKill Coordinator (SKC) to manage EA engagements. SEWIP Block 3 is developing an EW testbed to validate system performance.

SEWIP Block 3 developed and deployed a limited interim capability, starting in 2014, of a focused application of the Naval Research Lab (NRL) Transportable EW Module (TEWM) systems to support CNO Urgent Operational Needs (UON). Block 3T (AN/SLQ-59) is the TEWM system supporting the 7th fleet UON. TEWM Speed to Fleet (STF) (AN/SLQ-62) is the TEWM system supporting the 6th fleet UON. A capability enhancement upgrade for the AN/SLQ-62 will be developed in FY2017.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604757N *I Ship Self Def (Engage: Soft Kill/EW)*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	105.416	114.211	120.446	-	120.446
Current President's Budget	100.153	114.211	103.391	-	103.391
Total Adjustments	-5.263	0.000	-17.055	-	-17.055
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.900	0.000			
• SBIR/STTR Transfer	-2.363	0.000			
• Program Adjustments	0.000	0.000	-17.311	-	-17.311
• Rate/Misc Adjustments	0.000	0.000	0.256	-	0.256

Change Summary Explanation

FY 2016 funding request includes reductions as a result of SBIR/STTR transfer of $2.363 million.

FY 2018 funding request reflects a net program decrease of $19.311 million reduction of project 3316 based on planned efforts and expected expenditures.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 0954 / *Shipboard EW Improvement Program*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0954: *Shipboard EW Improvement Program*	474.207	10.478	13.322	16.013	-	16.013	16.332	16.413	16.766	17.101	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

- The growth between FY17 and FY18 is attributed to the contract award and EW improvement efforts of RCIP #6.
- FY2018-FY2022: SEWIP Block 2 (PU 3227) were realigned to SEWIP Block 1 (PU 0954) for RCIP efforts.

A. Mission Description and Budget Item Justification

0954 - The Surface Electronic Warfare Improvement Program (SEWIP) is segmented into Block 1A, Block 1B, Block 2, Block 3, and Soft Kill Coordination System (SKCS). Block 1A upgraded the AN/SLQ-32 pulse-processing computers and the display consoles allowing the system to more quickly identify threats and better display the information to the operator. Block 1B added adjunct sensors for special signal intercept, including Specific Emitter Identification (SEI), and High Gain High Sensitivity (HGHS) (Block 1B3), a critical improvement for the threat correlation, situational awareness, and extending the battle space. Block 2 enhanced Surface Electronic Warfare (EW) and provided improved Anti-Ship Missile Defense (ASMD) and situational awareness through an improved Electronic Support (ES) receiver, antenna, and combat system interface. The addition of Block 2 to Block 1B3 forms the AN/SLQ-32 (V)6. Block 3 will provide an enhanced electronic attack capability to improve ASMD and counter-targeting. The addition of Block 3 to AN/SLQ-32 (V)6 forms the AN/SLQ-32(V)7 system. EW Rapid Capability Insertion Process (RCIP) identifies system and mission capability gaps by analyzing EW baseline and fleet requirements, prioritizes those gaps based on fleet input and critical technology maturity, and develops upgrades to the AN/SLQ-32(V) product line to address those gaps. The SKCS will provide SK weapon coordination and enhanced situational awareness to the AN/SLQ-32 (V)6 with EW/radar track association to support SK engagement decisions, including Radar Cued Engagements (RCE) and Electronic Attack (EA) with both onboard EA, provided by AN/SLQ-32 (V)7, and off-board EA. RCIP also integrates Future Naval Capability (FNC) programs into SEWIP.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Electronic Warfare Rapid Capability Insertion Process (EW RCIP)	10.478	13.322	16.013	0.000	16.013
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Continued the investigation and finalization of EW cost saving improvement initiatives to reduce life-cycle costs. - Delivered the RCIP #2 HGHS software/firmware upgraded loads using load and threat libraries. - Continued RCIP #4 Aegis Baseline 9.C2 SKCS integration efforts to address platform gaps for automatic and semi-automatic engagements using NULKA decoys and to perform radar cued engagements for increased performance in the AN/SLQ-32(V)6 Electronic Warfare systems; Completed software development and system integration and testing activities for software build 1, which provides the core SKCS capability of radar cued					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 0954 / *Shipboard EW Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
engagements, in accordance with approved critical design; Initiated combat system level integration and testing activities with AEGIS Advanced Capability Build (ACB) 16 Phase 0 baseline; Initiated software development for software build 2, the first AN/SLQ-32(V)7 integration build, which establishes the infrastructure for the Onboard Electronic Attack (EA) controller to communicate with the EA subsystem and provides the capability to perform an EA engagement on an Electronic Support (ES) track in accordance with approved critical design; Achieved technology improvements for classification and tracking gaps. - Awarded RCIP #5 contract to increase EW Tactical Simulation capabilities to address advanced threats in the fleet environment and improve capabilities of fleet training for AN/SLQ-32 (V)6. Initiated and completed analysis of AN/SLQ-32 (V)6 specific need requirements to incorporate into existing simulator; Analyzed system and subsystem interoperability with improved tactical simulation; Developed the simulator requirements and prototype; Performed lab reviews at NSWC Dahlgren and the Center for Information Dominance schoolhouse; Completed Information Assurance requirements; Integrated tactical code into existing SEWIP Block 2 simulator baseline; Developed updated tactical code library; Conducted installation site visit. - Continued investigations of Algorithm Development of Enhanced Processing Techniques (ADEPT) improvement to SEWIP emitter processing. - Continued the identification of Electro Optics/Infrared (EO/IR) EW capability gaps and developed EO/IR requirements. - Identified additional EW technology shortfalls based on the current and emerging ASM threats and fleet requirements; solicited industry, University Affiliate Research Centers, and government activities for technical solutions; evaluated and selected RCIP technology candidates; evaluated RCIP technologies production readiness.					
FY 2017 Plans: - Continue RCIP #4 Aegis Baseline 9.C2 SKCS integration efforts with AN/SLQ-32 (V)6 to address platform gaps for automatic and semi-automatic engagements using NULKA decoys and the onboard Electronic Attack (EA) transmitter (AN/SLQ-32 (V)7); Complete software development and system integration and testing activities for software build 2; Initiate and complete software development and system integration and testing activities for software build 3 to include onboard EA and decoy coordination, interoperability and adherence to onboard EA constraints; Initiate and complete software development and system integration and testing activities for software build 4 to enhance the onboard EA controller for more complex EA capabilities in accordance with approved critical design. Continue combat system level integration and testing activities with AEGIS ACB 16 Phase 0 baseline.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 0954 / *Shipboard EW Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue RCIP #5 improvements to increase EW Tactical Simulation capabilities; Initiate and complete tactical simulator installation at training facility; Finalize tactical code incorporation into SEWIP Block 2 simulator and complete AN/SLQ-32 integration; Perform software updates and subsequent verification testing; Complete training for schoolhouse instructors. Commence development of AN/SLQ-32(V)6 into existing Surface Electronic Warfare Team Trainer (SEWTT) development. - Continue investigations of ADEPT improvement to SEWIP emitter processing. - Continue to address Electro Optics/Infrared (EO/IR) EW capability gaps and establish top-level requirement specifications. -Identify additional EW technology shortfalls based on the current and emerging ASM threats and fleet requirements; solicit industry, University Affiliate Research Centers, and government activities for technical solutions; evaluate and select RCIP technology candidates; evaluate RCIP technologies production readiness.					
FY 2018 Base Plans: - Continue RCIP #4 Aegis Baseline 9.C2 SKCS integration efforts with AN/SLQ-32 to address platform gaps for automatic and semi-automatic engagements using NULKA decoys and the onboard Electronic Attack (EA) (AN/SLQ-32 (V)7) and offboard EA systems; Continue to provide software upgrades every four months; Initiate and complete software development and system integration and testing activities for software builds 5, 6 and 7 to enhance the onboard EA and offboard EA controllers to provide more complex and coordinated EA capabilities in accordance with approved critical design; Continue combat system level integration and testing activities with AEGIS ACB 16 Phase 0 baseline leading ultimately to certification of the baseline in Q4 of FY18. - Transition the future naval capability program, Softkill Performance and Real-Time Assessment (SPARTA) into SKCS; Develop algorithms to measure key features observed in Softkill (SK) engagements and measure EA effectiveness; Develop algorithms to provide real-time assessment of SK performance to SEWIP; Initiate the development of improved fleet weapons coordination, informed Hard Kill(HK)/SK prioritization, weapons conservation, and enhanced operator battlespace awareness by contributing integral feedback regarding non-kinematic performance. - Continue RCIP #5 improvements to increase EW Tactical Simulation capabilities; Initiate system integration with Ship Self Defense System (SSDS), SKCS, ACB-16, and the onboard Surface Electronic Warfare Team Trainer (SEWTT); Perform software updates in tactical simulator to provide advanced training capabilities based on future system requirements. - Continue ADEPT improvements to SEWIP emitter processing; Perform integration efforts with AN/SLQ-32(V)6 systems and evaluate and analyze ADEPT and AN/SLQ-32(V)6 integration test results; Update software based on future requirements.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 0954 / *Shipboard EW Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Award RCIP #6 and initiate improvements to deployed military radars and signal and emitter processing and classification for AN/SLQ-32(V)6 Electronic Warfare system and increase the operator's tactical situational awareness; Initiate pulse processing improvements; Develop solutions, in addition to ADEPT, to improve track continuity, pulse sorting and improve the understanding and classification of complex emitters; Initiate system improvements to provide an increased tactical advantage, an increased system performance against non-anti-ship cruise missiles (ASCM) and ASCMs; Perform passive ranging of radio frequency (RF) emitting platforms and increase the capability of onboard and offboard Electronic Attack (EA) and maintain a tactical picture; Develop a commercial upgrade of the field-programmable gate arrays (FPGA) in the AN/SLQ-32(V)6 that will enable the system to keep pace with advanced threats and advanced processing algorithms and enhance the Electronic Support (ES) mission of the AN/SLQ-32(V)6. - Continue Electro Optics/Infrared (EO/IR) development; Initiate and provide systems engineering process improvements and address identified performance gaps. - Identify additional EW technology shortfalls based on the current and emerging ASM threats and fleet requirements; solicit industry, University Affiliate Research Centers, and government activities for technical solutions; evaluated and selected RCIP technology candidates; evaluated RCIP technologies production readiness. ***FY 2018 OCO Plans:*** OCO: - N/A					
Accomplishments/Planned Programs Subtotals	10.478	13.322	16.013	0.000	16.013

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2312: *OPN BA-2 AN/SLQ-32(V)*	259.271	274.892	240.433	-	240.433	399.516	533.644	709.028	486.957	Continuing	Continuing
• 24575N & 72827N/1C2C: *OMN BA-1 AN/SLQ-32(V)*	6.932	7.727	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	58.683
• 24575N & 72827N/1C1C: *OMN BA-1 AN/SLQ-32(V)*	0.000	0.000	7.955	-	7.955	8.104	8.278	8.449	9.111	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 0954 / *Shipboard EW Improvement Program*

D. Acquisition Strategy

The Rapid Capability Insertion Process(RCIP) is a process that identifies candidate capability gap/technology solution pairs, refines the value proposition description for each pair, prioritizes projects for funding and executes projects that result in improved capability transitioned to the fleet.

E. Performance Metrics

Successfully achieve Block 1B3 Milestone C / Low Rate Initial Production (LRIP) Decision Review (DR).
Successfully complete Block 1B3 Initial Operational Test & Evaluation (IOT&E).
Successfully achieve Block 1B3 Full Rate Production (FRP) DR.

Successfully identify RCIP capabilities.
Successfully identify and assess RCIP Science & Technology candidates.
Award development contract for RCIP #1.
Successfully demonstrate and validate RCIP capabilities.
Award development contract for RCIP #2.
Award development contract for RCIP #3.
Award development contract for RCIP #4.
Award development contract for RCIP #5.
Award development contract for RCIP #6.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 0954 / *Shipboard EW Improvement Program*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Ancillary Hardware Development	Various	Various : Various	151.420	0.000		0.000		0.000		-		0.000	0.000	151.420	-
ESE Development	SS/CPFF	Northrop Grumman : Goleta, CA	13.037	0.000		0.000		0.000		-		0.000	0.000	13.037	-
ICAD Development	SS/CPFF	GD-AIS : Fairfax, VA	11.747	0.000		0.000		0.000		-		0.000	0.000	11.747	-
ESE Development (Block 1A)	SS/CPFF	Northrop Grumman : Goleta, CA	0.471	0.000		0.000		0.000		-		0.000	0.000	0.471	-
System Integrator	C/CPAF	GD-AIS : Fairfax, VA	13.798	0.000		0.000		0.000		-		0.000	0.000	13.798	-
1B Development	SS/CPIF	GD-AIS : Fairfax, VA	86.292	0.000		0.000		0.000		-		0.000	0.000	86.292	-
Q-70 Mods	C/CPFF	LM-EAGAN : Eagan, MN	3.491	0.000		0.000		0.000		-		0.000	0.000	3.491	-
Block 2 Study/ Development	C/CPIF	BAE : Nashua, NH	0.336	0.000		0.000		0.000		-		0.000	0.000	0.336	-
ALQ210 Integration	WR	NSWC Dahlgren : Dahlgren, VA	10.345	0.000		0.000		0.000		-		0.000	0.000	10.345	-
Rapid Capability Insertion Process (RCIP) #1	C/CPIF	Lockheed Martin : Syracuse, NY	2.000	0.000		0.000		0.000		-		0.000	0.000	2.000	-
RCIP #1	WR	NSWC Dahlgren : Dahlgren, VA	0.650	0.000		0.000		0.000		-		0.000	0.000	0.650	-
RCIP #2	SS/CPFF	Northrop Grumman : Goleta, CA	2.514	0.000		0.000		0.000		-		0.000	0.000	2.514	-
RCIP #2	SS/FFP	GD-AIS : Fairfax, VA	0.734	0.000		0.000		0.000		-		0.000	0.000	0.734	-
RCIP #3	SS/CPFF	EWA-GSI : Fairmont, WV	1.978	0.000		0.000		0.000		-		0.000	0.000	1.978	-
RCIP #3	WR	ONR/ACI : Washington, DC	3.130	0.000		0.000		0.000		-		0.000	0.000	3.130	-
RCIP #4	SS/CPFF	APL : Laurel, MD	0.398	0.950	Mar 2016	1.740	Nov 2016	1.190	Dec 2017	-		1.190	Continuing	Continuing	Continuing
RCIP #4	WR	NSWC Dahlgren : Dahlgren, VA	0.000	2.603	Mar 2016	4.528	Nov 2016	3.569	Nov 2017	-		3.569	Continuing	Continuing	Continuing
RCIP #5	WR	NSWC Dahlgren : Dahlgren, VA	0.000	1.235	Mar 2016	1.115	Nov 2016	1.252	Nov 2017	-		1.252	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 0954 / *Shipboard EW Improvement Program*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RCIP #6	TBD	TBD : TBD	0.000	0.000		0.000		5.012	Apr 2018	-		5.012	Continuing	Continuing	Continuing
SEWTT Development	SS/CPFF	EWA : Fairmont, WV	0.000	0.000		0.100	May 2017	0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	302.341	4.788		7.483		11.023		-		11.023	-	-	-

Remarks

RCIP #3 was completed with FY 2015 funds.
The growth between FY 2017 and FY 2018 in Product Development is primarily due to funding required for RCIP #6 as well as the realignment of $0.226M FY18 RDT&E funds from Block 2 (3227).

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 1 Integrated Logistics Support	WR	NSWC Crane, DD, NRL, APL : Crane, IN; Dahlgren, VA; Washington, DC; Laurel,MD	9.912	0.000		0.000		0.000		-		0.000	0.000	9.912	-
Block 1 Integrated Logistics Support	WR	NSWC Crane : Crane, IN	3.418	0.000		0.000		0.000		-		0.000	0.000	3.418	-
Block 1 Integrated Logistics Support	WR	NSWC DD : Dahlgren, VA	0.293	0.000		0.000		0.000		-		0.000	0.000	0.293	-
Block 1 Government Engineering Support	WR	NSWC Crane, DD, NRL, APL : Crane, IN; Dahlgren, VA; Washington, DC; Laurel,MD	34.783	0.000		0.000		0.000		-		0.000	0.000	34.783	-
Block 1 Government Engineering Support	WR	NSWC Dahlgren : Dahlgren, VA	4.727	1.011	Mar 2016	1.292	Nov 2016	1.096	Nov 2017	-		1.096	Continuing	Continuing	Continuing
Block 1 Government Engineering Support	WR	NSWC Crane : Crane, IN	4.601	0.433	Mar 2016	0.388	Jan 2017	0.481	Nov 2017	-		0.481	Continuing	Continuing	Continuing
Block 1 Government Engineering Support	WR	NRL : Washington, DC	2.325	0.808	Mar 2016	0.965	Nov 2016	0.711	Nov 2017	-		0.711	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 0954 / *Shipboard EW Improvement Program*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 1 Government Engineering Support	SS/CPFF	APL : Laurel, MD	2.177	0.166	Mar 2016	0.561	Feb 2017	0.200	Nov 2017	-		0.200	0.000	3.104	-
Block 1 Government Engineering Support	WR	SWRMC : San Diego, CA	0.200	0.000		0.000		0.000		-		0.000	0.000	0.200	-
Block 1 Government Engineering Support	WR	MIT : Hanscom AFB, MA	0.456	0.060	Jun 2016	0.860	May 2017	0.800	Nov 2017	-		0.800	Continuing	Continuing	Continuing
Block 1 Government Engineering Support	WR	MITRE : Aberdeen Proving Ground, MD	0.083	0.444	Mar 2016	0.000		0.000		-		0.000	0.000	0.527	-
Block 1 Government Engineering Support	WR	NUWC Keyport : Keyport, WA	0.040	0.213	Feb 2016	0.000		0.000		-		0.000	0.000	0.253	-
Block 1 SIPRNET Access	WR	ARL : Adelphi, MD	0.092	0.000		0.000		0.000		-		0.000	0.000	0.092	-
Block 1B3 Install on test ship	WR	NSSA Norfolk : Norfolk, VA	0.857	0.000		0.000		0.000		-		0.000	0.000	0.857	-
Block 1B3 Integration	WR	Lockheed Martin : Syracuse, NY	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	-
		Subtotal	64.964	3.135		4.066		3.288		-		3.288	-	-	-

Remarks

The decrease in funding between FY 2017 and FY 2018 in Support is primarily due to the reallocation of funds and increased Product Development requirements of RCIP #6.
Support includes realignment of $0.200M FY18 funds from Block 2 (3227).

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 1 Integration and Test	WR	NSWC Crane, DD, NRL : Crane, IN; Dahlgren, VA; Washington, DC	0.853	0.000		0.000		0.000		-		0.000	0.000	0.853	-
Developmental Test & Evaluation	Various	Various : Various	8.958	0.000		0.000		0.000		-		0.000	0.000	8.958	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 0954 / *Shipboard EW Improvement Program*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 1A Test Planning/ T&E Events	WR	NSWC Crane, DD, NRL : Crane, IN; Dahlgren, VA; Washington, DC	11.036	0.000		0.000		0.000		-		0.000	0.000	11.036	-
Block 1B Test Planning/ T&E Events	WR	NSWC Crane, DD, NRL, NAVAIR, OPTEVFOR, NSWC PHD : Crane, IN; Dahlgren, VA; Washington, DC; MD; CA	9.567	0.000		0.000		0.000		-		0.000	0.000	9.567	-
Block 1B Test Planning/ T&E Events	WR	NSWC Dahlgren : Dahlgren, VA	3.231	0.000		0.000		0.000		-		0.000	0.000	3.231	-
Block 1B Test Planning/ T&E Events	WR	NSWC Crane : Crane, IN	3.026	0.000		0.000		0.000		-		0.000	0.000	3.026	-
Block 1B Test Planning/ T&E Events	WR	NRL : Washington, DC	5.365	0.000		0.000		0.000		-		0.000	0.000	5.365	-
Block 1B Test Planning/ T&E Events	WR	OPTEVFOR : Norfolk, VA	0.612	0.000		0.000		0.000		-		0.000	0.000	0.612	-
Block 1B Test Planning/ T&E Events	WR	JITC : Indian Head, MD	0.288	0.000		0.000		0.000		-		0.000	0.000	0.288	-
(V)4 ESE Test Planning/ T&E Events	WR	NSWC Crane, DD, NRL : Crane, IN; Dahlgren, VA; Washington, DC	0.686	0.000		0.000		0.000		-		0.000	0.000	0.686	-
(V)4 ESE Test Planning/ T&E Events	WR	NSWC Dahlgren : Dahlgren, VA	0.609	0.000		0.000		0.000		-		0.000	0.000	0.609	-
(V)4 ESE Test Planning/ T&E Events	WR	NSWC Crane : Crane, IN	1.153	0.000		0.000		0.000		-		0.000	0.000	1.153	-
(V)4 ESE Test Planning/ T&E Events	WR	NRL : Washington, DC	1.808	0.000		0.000		0.000		-		0.000	0.000	1.808	-
(V)4 ESE Test Planning/ T&E Events	WR	OPTEVFOR : Norfolk, VA	0.192	0.000		0.000		0.000		-		0.000	0.000	0.192	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 0954 / *Shipboard EW Improvement Program*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RCIP Test Planning/T&E Events	WR	NSWC Dahlgren : Dahlgren, VA	1.402	0.100	Mar 2016	0.455	Jan 2017	0.271	Nov 2017	-		0.271	Continuing	Continuing	Continuing
RCIP Test Planning/T&E Events	WR	NSWC Crane : Crane, IN	0.889	0.000		0.000		0.000		-		0.000	0.000	0.889	-
RCIP Test Planning/T&E Events	WR	NRL : Washington, DC	0.929	0.800	Mar 2016	0.000		0.000		-		0.000	0.000	1.729	-
RCIP Test Planning/T&E Events	SS/CPFF	APL : Laurel, MD	0.000	0.100	Mar 2016	0.000		0.000		-		0.000	0.000	0.100	-
RCIP Test Planning/T&E Events	WR	COMOPTEVFOR : Norfolk, VA	0.000	0.000		0.104	May 2017	0.106	Nov 2017	-		0.106	Continuing	Continuing	Continuing
		Subtotal	50.604	1.000		0.559		0.377		-		0.377	-	-	-

Remarks

Development Test & Evaluation included several activities from the original development of the SLQ-32 system. This line has been left on the exhibit to track Prior year costs of this PU.

Support includes realignment of $0.220M FY18 RDT&E funds from Block 2 (3227).

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 1 Program Management Support	C/CPIF	SPA (SEAPORT) : Washington, D.C.	32.702	0.000		0.000		0.000		-		0.000	0.000	32.702	-
Block 1 Program Management Support	C/CPIF	TMB (SEAPORT) : Washington, D.C.	0.113	0.286	Apr 2016	0.094	Jan 2017	0.562	Nov 2017	-		0.562	Continuing	Continuing	Continuing
Block 1 Program Management Support	SS/CPIF	SPA : Washington, D.C.	0.000	1.064	Feb 2016	0.774	Jan 2017	0.000		-		0.000	0.000	1.838	-
Block 1 Program Management Support	TBD	TBD : TBD	0.000	0.000		0.308	May 2017	0.723	Nov 2017	-		0.723	Continuing	Continuing	Continuing
Block 1 Program Managment Support	C/CPIF	CACI (SEAPORT) : Washington, DC	0.000	0.165	Jun 2016	0.000		0.000		-		0.000	0.000	0.165	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 0954 / *Shipboard EW Improvement Program*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 1 Program Management Support	WR	NSWC Crane, DD, NRL : Crane, IN; Dahlgren, VA; Washington, DC	17.310	0.000		0.000		0.000		-		0.000	0.000	17.310	-
Block 1 Program Management Support	WR	NSWC Crane : Crane, IN	1.636	0.000		0.000		0.000		-		0.000	0.000	1.636	-
Block 1 Program Management Support	WR	NSWC Dahlgren : Dahlgren, VA	1.662	0.000		0.000		0.000		-		0.000	0.000	1.662	-
Block 1 Program Management Support	WR	NRL : Washington, DC	0.977	0.000		0.000		0.000		-		0.000	0.000	0.977	-
Block 1 Program Management Support	SS/CPFF	APL : Laurel, MD	0.527	0.000		0.000		0.000		-		0.000	0.000	0.527	-
Block 1 Travel	WR	NAVSEA Program Office Travel : Washington, DC	1.245	0.040	Apr 2016	0.038	Jan 2017	0.040	Nov 2017	-		0.040	Continuing	Continuing	Continuing
Block 1 DoD Acquistion Workforce Fund	Various	Various : Various	0.126	0.000		0.000		0.000		-		0.000	0.000	0.126	-
		Subtotal	56.298	1.555		1.214		1.325		-		1.325	-	-	-

Remarks

The TBD for Program Management Support will be competitively awarded in 3rd quarter FY2017.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	474.207	10.478		13.322		16.013		-		16.013	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 0954 / *Shipboard EW Improvement Program*

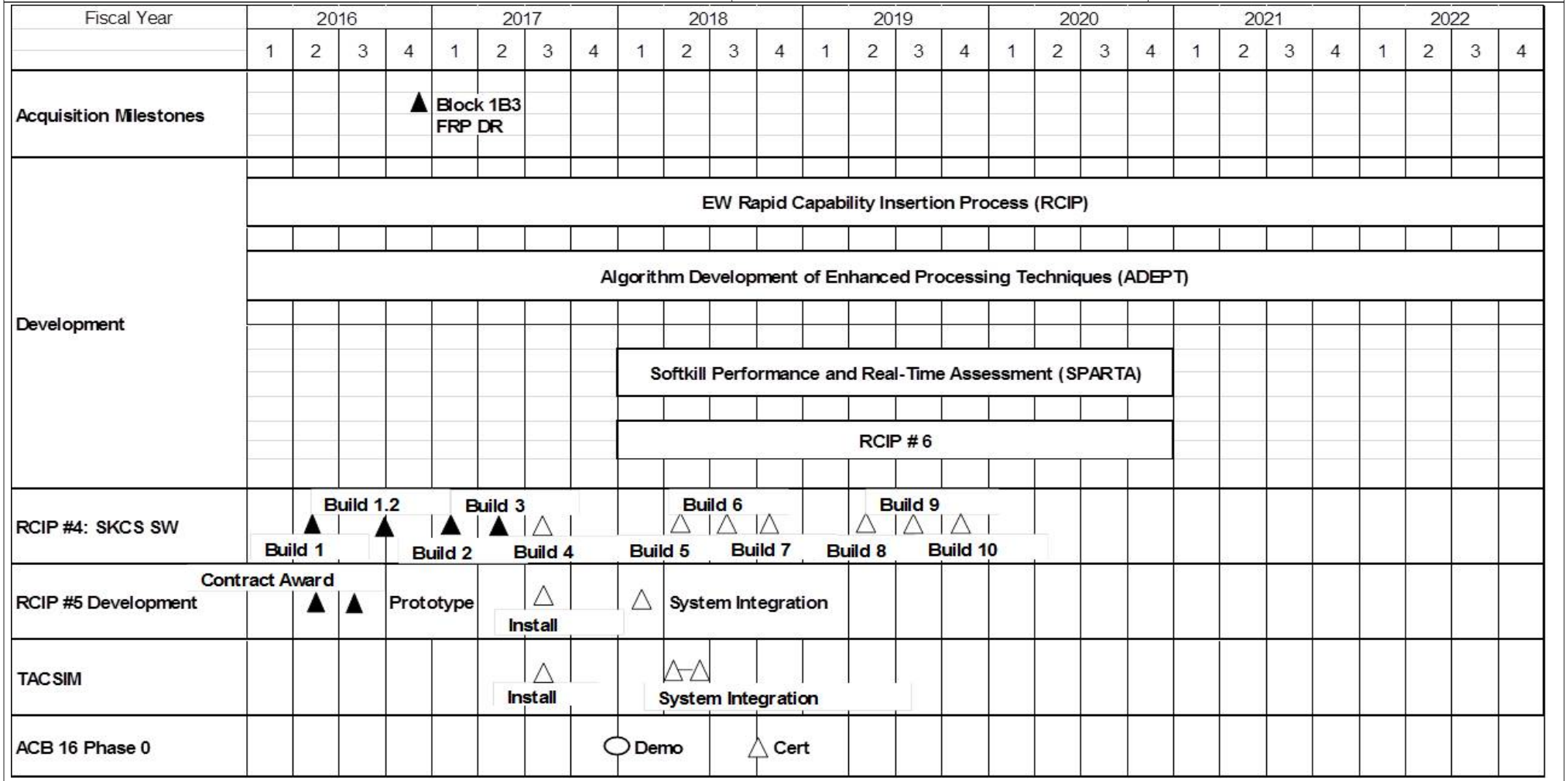


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 0954 / *Shipboard EW Improvement Program*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0954				
Block 1B3 FRP DR	4	2016	4	2016
EW Rapid Capability Insertion Process (RCIP)	1	2016	4	2022
Algorithm Development of Enhanced Processing Techniques (ADEPT)	1	2016	4	2022
RCIP #4: SKCS SW Builds 1-10	2	2016	4	2019
RCIP #5 Development	2	2016	1	2018
TACSIM	3	2017	2	2018
ACB 16 Phase 0	1	2018	4	2018
Softkill Performance and Real-Time Assessment (SPARTA)	1	2018	4	2020
RCIP #6	1	2018	4	2020

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 2190 / *NULKA Decoy*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2190: *NULKA Decoy*	63.683	1.854	1.934	4.181	-	4.181	4.115	5.259	5.407	7.560	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Offboard Active Decoy (NULKA) is a joint cooperative program between the United States and Australia that developed an active offboard decoy that utilizes a broadband radio frequency repeater mounted atop a hovering rocket. NULKA is designed to counter a wide variety of present and future radar guided Anti-Ship Missiles (ASMs) by radiating a large radar cross section while flying a ship-like trajectory. The United States developed the electronic payload and fire control system, while Australia developed the hovering rocket. Future efforts involve development of the capability for high value unit protection.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: NULKA Decoy Subsystem	1.854	1.934	4.181	0.000	4.181
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Continued NULKA decoy subsystem integration and improvements to include Effectiveness Studies, Engineering Studies, and Fly Out Tactics.					
FY 2017 Plans: - Continue NULKA decoy subsystem integration and improvements to include Effectiveness Studies, Engineering Studies, and Fly Out Tactics.					
FY 2018 Base Plans: - Continue NULKA decoy subsystem integration and improvements to include Effectiveness Studies, Engineering Studies, and Fly Out Tactics. - Commence DLP technology refresh to address obsolescence issues.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.854	1.934	4.181	0.000	4.181

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 2190 / *NULKA Decoy*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/5231: *Ship Missile Support Equipment*	57.791	62.792	66.407	-	66.407	62.354	61.806	63.141	64.523	Continuing	Continuing
• OMN/12CR0 (1C2C): *Nulka*	7.138	5.864	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• OMN/11CD0 (1C1C): *Nulka*	0.000	0.000	6.044	-	6.044	6.303	6.438	6.584	7.400	Continuing	Continuing

Remarks

OPN Controls reflect the following Line Item 5231 Project Units (PU's) under the 'ANTI-SHIP MISSILE DECOY SYSTEM' program: VV001, VV002, VV003, VV004, VV830, VV831, VV832, and VV833.

The growth between FY2017 and FY2018 funds an earlier start for the DLP Technology Refresh development, as obsolescence issues have become a higher priority.

D. Acquisition Strategy

NULKA is a joint cooperative program between United States and Australia in full rate production.

E. Performance Metrics

Successfully complete first-of-class testing of MK 53 DLS upgrade for CVN.
Successfully complete Element Certification Decoy Launch Processor (DLP) software version 6_5 for the CVN 68 ship class.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 3227 / *SEWIP Block 2*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3227: *SEWIP Block 2*	222.451	0.397	0.315	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	223.163
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The SEWIP Block 2 program is developing an upgraded antenna, receiver, and combat system interface for AN/SLQ-32. The upgrades are necessary in order to pace the threat, improving detection, accuracy, and mitigation of EMI.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: SEWIP Block 2	0.397	0.315	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Continued analysis and make recommendations for corrections of deficiencies.					
FY 2017 Plans: - Continue analysis and make recommendations for corrections of deficiencies. FY 2017 OCO Plans: - N/A					
FY 2018 Base Plans: N/A					
FY 2018 OCO Plans: N/A					
Note: FY2018-FY2022 funds were realigned to SEWIP Block 1 (PU 0954) for RCIP efforts, as SEWIP Block 2 achieved FRP in 4th quarter FY2016.					
Accomplishments/Planned Programs Subtotals	0.397	0.315	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3227 / *SEWIP Block 2*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2312: *OPN BA-2 AN/SLQ-32(V)*	259.271	274.892	240.433	-	240.433	399.516	533.644	709.028	486.957	Continuing	Continuing
• OMN/0204575N/1C2C: *OMN BA-1 AN/SLQ-32(V)6*	6.212	11.667	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	26.186
• OMN/0204575N/1C1C: *OMN BA-1 AN/SLQ-32(V)6*	0.000	0.000	12.025	-	12.025	12.347	12.615	12.848	12.643	Continuing	Continuing

Remarks

D. Acquisition Strategy

SEWIP will develop Block upgrades to AN/SLQ-32 based on integrating technology advances and adding functional capabilities in an incremental fashion. Each Block and Sub-Block will be developed and contracted in an individual yet coordinated and overlapping fashion.

E. Performance Metrics

Successfully achieve Block 2 MS C / LRIP DR.
Successfully complete Block 2 Initial Operational Test & Evaluation (IOT&E).
Successfully achieve Block 2 Full Rate Production (FRP) DR.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 3316 / *Advanced Offboard EW*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3316: *Advanced Offboard EW*	106.887	18.966	36.080	45.867	-	45.867	67.123	55.218	26.594	10.868	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

3316 - The Advanced Offboard EW (AOEW) program is for the development of long duration off-board decoys integrated with onboard systems for EW coordination to counter identified EW gaps (additional details classified) in response to an urgent operational need from the Fleet that has been approved by the CNO for execution. Currently no counter to the threat exists. The program began with a Rapid Response Effort (RRE) in FY12-15 and a Decoy Development Effort (DDE) culminating in the delivery of a fully supported, full capability system. The RRE consisted of the evaluation and integration of commercially available decoys. The DDE consists of the development and evaluation of a long duration, active electronic offboard decoy system (payload only) integrated on an existing flight vehicle and an onboard/offboard EW coordinator fully able to counter the threat.

The AOEW Preliminary Design contract award shifted from June 2016 to December 2016. In order to deliver this capability to the fleet as soon as possible, Engineering Development Model (EDM) contract delivery requirements have been re-phased, which enables the program to reach Milestone C in FY20. The MH60R helicopter AOEW decoy EDM and hardware delivery, integration, and flight test requirements were de-coupled from that of the MH60S. The MH60R and MH60S were originally both scheduled to be integrated and flight tested in the same fiscal year, but the integration and flight testing of the MH60S has now been shifted to FY21.

In FY16 and FY17 AOEW includes a government software development effort to integrate AOEW into the Soft Kill Coordination System (SKCS) to gain maximum effectiveness from the AOEW decoy through coordination with on board systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: AOEW - Decoy Development Effort (DDE)	18.966	36.080	45.867	0.000	45.867
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					
- Conducted Gate 4					
- Continued acquisition documentation development					
- Continued interoperability analysis					
- Continued tactics analysis and development					
- Initiated integration of ship and air interfaces					
- Commenced AOEW SKCS development					
- Commenced sustainment and training plan development					
- Commenced Modeling & Simulation (M&S) development					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3316 / *Advanced Offboard EW*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Commenced test planning					
FY 2017 Plans: - Complete acquisition documentation development - Conduct MS-B/Gate 5 - Award competitive development contract for decoy Preliminary Design - Continue interoperability analysis - Continue tactics analysis and development - Continue integration of ship and air interfaces - Continue AOEW SKCS development - Continue sustainment and training plan development - Continue test and M&S plan development - Conduct Integrated Baseline Review - Conduct System Requirements Review (SRR) - Conduct System Functional Review (SFR) - Conduct Preliminary Design Review (PDR) - Award contract option for Engineering & Manufacturing Development (E&MD)					
FY 2018 Base Plans: - Continue interoperability analysis - Continue tactics analysis and development - Continue integration of ship and air interfaces - Continue AOEW SKCS development - Continue sustainment and training plan development - Continue test and M&S plan development - Conduct Gate 6 - Conduct Critical Design Review (CDR)					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	18.966	36.080	45.867	0.000	45.867

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3316 / *Advanced Offboard EW*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OMN/12CR0 (1C2C): *SLQ-59, SLQ-62, and MK-59 Decoy Launching Systems*	0.000	3.455	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• OMN/11CD0 (1C1C): *SLQ-59, SLQ-62, and MK-59 Decoy Launching Systems*	0.000	0.000	3.398	-	3.398	3.411	3.410	3.412	2.775	Continuing	Continuing
• OPN/5231: *Ship Missile Support Equipment*	0.000	0.000	0.000	-	0.000	0.000	0.000	11.139	41.419	Continuing	Continuing

Remarks

OPN Controls reflect the following Line Item 5231 Project Unit (PU) under the 'ANTI-SHIP MISSILE DECOY SYSTEM' program: VV500.

D. Acquisition Strategy

The AOEW DDE decoy is being competitively contracted and developed, and builds on technologies and concepts currently in development by ONR. For RRE, commercially available decoys were procured for evaluation, integration and testing.

E. Performance Metrics

For DDE:
Achieve Milestone (MS) B
Award Preliminary Design/E&MD contract.
Conduct System Requirements Review (SRR)
Conduct System Functional Review (SFR)
Conduct Preliminary Design Review (PDR)
Conduct Critical Design Review (CDR)
Achieve Milestone (MS) C
Conduct Initial Operational Test and Evaluation (IOT&E)
Conduct Developmental Test (DT) Assist
Conduct DDE Test and Certification

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 3316 / *Advanced Offboard EW*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Analysis of Alternatives	WR	CNA : Alexandria, VA	1.300	0.000		0.000		0.000		-		0.000	0.000	1.300	Continuing
Concept Analysis and Integration Assessment	SS/CPFF	APL : Laurel, MD	8.105	2.562	Feb 2016	0.950	Nov 2016	1.675	Nov 2017	-		1.675	Continuing	Continuing	Continuing
Concept Analysis and Technology Studies	WR	MIT-LL : Boston, MA	2.580	1.200	Feb 2016	0.910	Nov 2016	0.910	Nov 2017	-		0.910	Continuing	Continuing	Continuing
Concept Development and Technology Studies	WR	NRL : Washington, D.C.	22.587	2.280	Feb 2016	1.871	May 2017	0.861	Nov 2017	-		0.861	Continuing	Continuing	Continuing
Technology Development and Systems Requirements	WR	NSWC Dahlgren : Dahlgren, VA	10.349	2.015	Feb 2016	1.409	Nov 2016	3.347	Nov 2017	-		3.347	Continuing	Continuing	Continuing
Systems Requirements and Integration Studies	WR	NSWC Crane : Crane, IN	2.233	0.000		0.000		0.000		-		0.000	0.000	2.233	Continuing
Concept Development and Technology Studies	WR	NAVAIR : Patuxent River, MD	0.740	2.051	Mar 2016	2.258	Nov 2016	2.913	Nov 2017	-		2.913	Continuing	Continuing	Continuing
RRE Hardware Development	C/CPIF	Airborne Systems : UK	8.364	0.000		0.000		0.000		-		0.000	0.000	8.364	Continuing
DDE Preliminary Design/ E&MD	C/CPIF	Lockheed Martin : Syracuse, NY	0.000	0.000	Dec 2016	13.776	Nov 2016	20.550	Nov 2017	-		20.550	Continuing	Continuing	Continuing
Ship Integration	WR	SPAWAR : San Diego, CA	0.000	0.400	Jul 2016	1.147	Nov 2016	1.060	Nov 2017	-		1.060	0.000	2.607	-
		Subtotal	56.258	10.508		22.321		31.316		-		31.316	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Development Support	WR	NRL : Washington, DC	6.964	1.157	Feb 2016	0.586	May 2017	0.556	Nov 2017	-		0.556	Continuing	Continuing	Continuing
Government Development and Engineering Support	WR	NSWC Dahlgren : Dahlgren, VA	4.948	1.627	Feb 2016	2.677	Nov 2016	3.236	Nov 2017	-		3.236	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 3316 / *Advanced Offboard EW*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support	WR	NSWC Crane : Crane, IN	6.641	2.539	Feb 2016	2.994	Nov 2016	2.809	Nov 2017	-		2.809	Continuing	Continuing	Continuing
Government Engineering Support	WR	NSWC Carderock : Bethesda, MD	0.616	0.127	Feb 2016	0.000	Nov 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering Support	SS/CPFF	APL : Laurel, MD	0.751	0.500	Feb 2016	2.191	Nov 2016	1.500	Nov 2017	-		1.500	Continuing	Continuing	Continuing
Government Development Support	WR	NAVAIR : Patuxent River, MD	2.009	0.516	Mar 2016	1.141	Nov 2016	1.718	Nov 2017	-		1.718	Continuing	Continuing	Continuing
Logistics/Training	C/CPFF	Pioneering Evolution : Arlington, VA	0.166	0.000		0.000		0.000		-		0.000	0.000	0.166	-
RRE Installation	WR	Planning Yard : Yokosuka, Japan	0.034	0.000		0.000		0.000		-		0.000	0.000	0.034	-
RRE Installation	SS/CPFF	Planning Yard : Bath, ME	4.254	0.049	Jul 2016	0.000		0.000		-		0.000	0.000	4.303	-
EW UON	WR	Cherry Point Army : Aberdeen Proving Ground, MD	0.022	0.000		0.000		0.000		-		0.000	0.000	0.022	-
EW UON	WR	Cherry Point Navy : Cherry Point, NC	0.148	0.000		0.000		0.000		-		0.000	0.000	0.148	-
EW UON	WR	NSWC Indian Head : Indian Head, MD	0.050	0.000		0.000		0.000		-		0.000	0.000	0.050	-
EW UON	WR	NSSA Norfolk : Norfolk, VA	0.070	0.000		0.000		0.000		-		0.000	0.000	0.070	-
RRE Installation	WR	Norfolk Naval Shipyard : Norfolk, VA	2.064	0.000		0.000		0.000		-		0.000	0.000	2.064	-
RRE Installation	WR	Det-Naples : Naples, Italy	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
Logistics/Training	SS/CPFF	EWA : Fairmont, WV	0.767	0.000		0.000		0.000		-		0.000	0.000	0.767	-
RRE Installation	WR	FLC ROTA : Rota, Spain	0.000	0.055	Oct 2016	0.000		0.000		-		0.000	0.000	0.055	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 3316 / *Advanced Offboard EW*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	30.004	6.570		9.589		9.819		-		9.819	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Planning and Development Testing	WR	NRL : Washington, DC	3.161	0.658	Feb 2016	0.665	May 2017	0.396	Nov 2017	-		0.396	Continuing	Continuing	Continuing
Test Planning and Development Testing	WR	NSWC/Dahlgren : Dahlgren, VA	2.931	0.061	Feb 2016	0.359	Nov 2016	0.359	Nov 2017	-		0.359	Continuing	Continuing	Continuing
Test Planning and Development Testing	WR	NSWC Crane : Crane, IN	0.938	0.215	Feb 2016	0.078	Nov 2016	0.078	Nov 2017	-		0.078	Continuing	Continuing	Continuing
Test Planning and Development Testing	WR	NAVAIR : Patuxent River, MD	0.038	0.335	Mar 2016	0.310	Nov 2016	1.250	Nov 2017	-		1.250	Continuing	Continuing	Continuing
Test Planning and Development Testing	WR	OPTEVFOR : Norfolk, VA	0.274	0.056	Jun 2016	0.295	Nov 2016	0.295	Nov 2017	-		0.295	Continuing	Continuing	Continuing
Test and Evaluation	WR	Navy Post Graduate School : Monterey, CA	0.090	0.000		0.000		0.000		-		0.000	0.000	0.090	-
EW UON Test and Evaluation	C/FPAF	SRF Rota : Rota, Spain	1.728	0.000		0.000		0.000		-		0.000	0.000	1.728	-
EW UON Test and Evaluation	WR	NSSA Norfolk : Norfolk, VA	0.018	0.000		0.000		0.000		-		0.000	0.000	0.018	-
EW UON Test and Evaluation	WR	SUPSHIP Bath : Bath, ME	1.166	0.000		0.000		0.000		-		0.000	0.000	1.166	-
		Subtotal	10.344	1.325		1.707		2.378		-		2.378	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3316 / *Advanced Offboard EW*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	CSC (SEAPORT) : Washington, DC	0.315	0.000		0.000		0.000		-		0.000	0.000	0.315	-
Program Management Support	C/CPIF	CACI (SEAPORT) : Washington, DC	0.155	0.200	Feb 2016	0.393	Nov 2016	0.324	Nov 2017	-		0.324	0.000	1.072	-
Program Management Support	C/CPIF	SPA (SEAPORT) : Washington, DC	7.866	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Management Support	SS/CPIF	SPA : Washington, DC	1.000	0.330	Jul 2016	0.668	Nov 2016	0.000		-		0.000	0.000	1.998	-
Program Management Support	TBD	TBD : TBD	0.000	0.000		0.668	May 2017	1.336	Nov 2017	-		1.336	0.000	2.004	-
Program Management Support	C/CPIF	TMB (SEAPORT) : Washington, DC	0.855	0.023	Jul 2016	0.623	Nov 2016	0.623	Nov 2017	-		0.623	0.000	2.124	-
Program Management Support	C/CPIF	STRATEGIC INSIGHT (SEAPORT) : Washington, DC	0.000	0.000		0.041	Mar 2017	0.000		-		0.000	0.000	0.041	-
Travel	WR	NAVSEA Program Office Travel : Washington, DC	0.090	0.010	Feb 2016	0.070	Nov 2016	0.071	Nov 2017	-		0.071	Continuing	Continuing	Continuing
		Subtotal	10.281	0.563		2.463		2.354		-		2.354	-	-	-

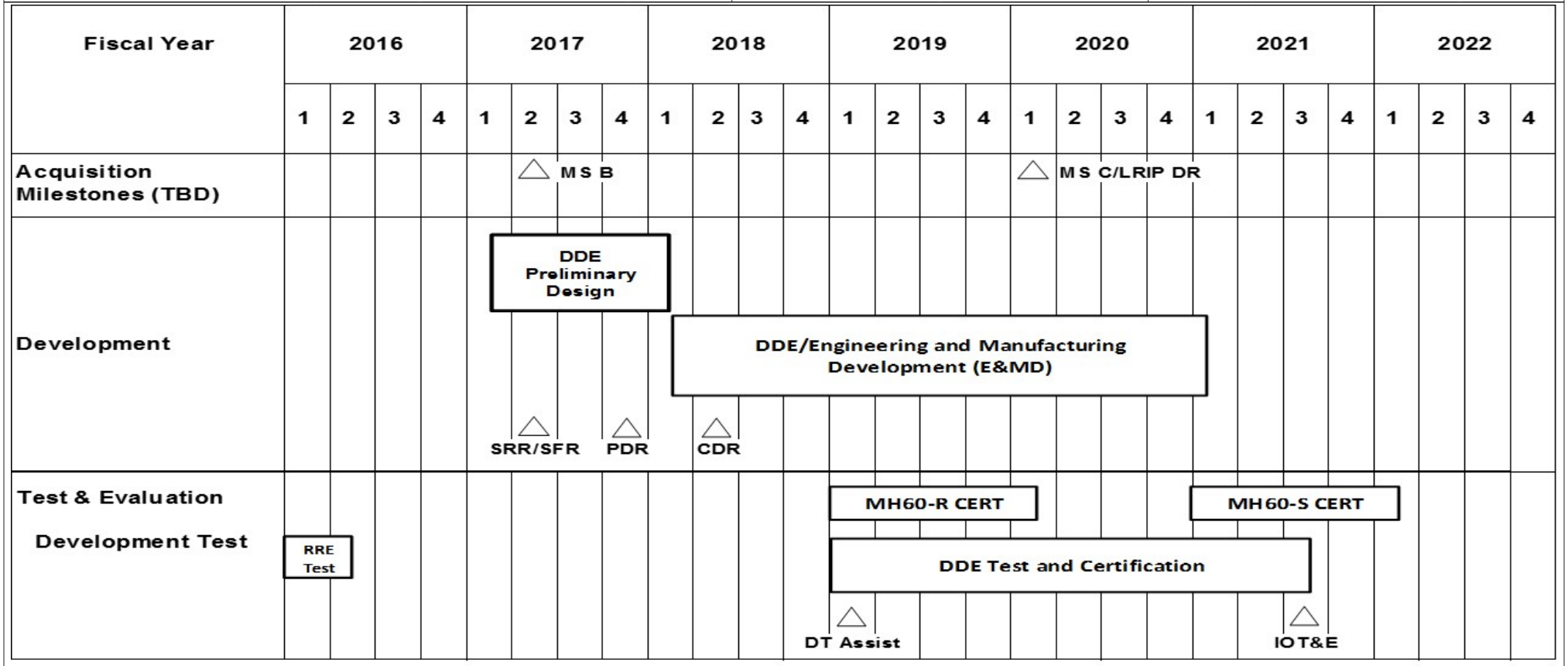
Remarks

The TBD for Program Management Support will be competitively awarded in May 2017.

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	106.887	18.966		36.080		45.867		-		45.867	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3316 / *Advanced Offboard EW*



RRE: Rapid Response Effort

DDE: Decoy Development Effort

NOTE: MH60-R AND MH60-S FLIGHT CERT SPLIT

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3316 / *Advanced Offboard EW*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3316				
RRE Test	1	2016	2	2016
Milestone (MS) B	2	2017	2	2017
DDE Preliminary Design	1	2017	1	2018
System Requirements Review (SRR)	2	2017	2	2017
System Functional Review (SFR)	2	2017	2	2017
Preliminary Design Review (PDR)	4	2017	4	2017
DDE / E&MD	1	2018	1	2021
Critical Design Review (CDR)	2	2018	2	2018
DDE Test and Certification	1	2019	3	2021
Developmental Test (DT) Assist	1	2019	1	2019
Milestone (MS) C / LRIP DR	1	2020	1	2020
Initial Operational Test and Evaluation (IOT&E)	3	2021	3	2021
MH60-R Certification	1	2019	1	2020
MH60-S Certification	1	2021	1	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 3321. / *SEWIP Block 3*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3321.: *SEWIP Block 3*	280.233	68.458	62.560	37.330	-	37.330	37.445	21.983	23.445	7.021	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

SEWIP Block 3 is developing an Electronic Attack (EA) capability improvement required for the AN/SLQ-32(V) system to keep pace with the threat. SEWIP Block 3 will provide the AN/SLQ-32(V)7 system for all surface ships (CVN, CG, DDG, LHD) outfitted with the active variant of the AN/SLQ-32, mainly the (V)3 and (V)4, as well as select new construction platforms.

The SEWIP Block 3 Acquisition leverages technology developed under the Office of Naval Research's (ONR) Integrated Topside (InTop) Science and Technology (S&T) effort. SEWIP Block 3 will continue to expand the integrated shipboard combat system by providing a new integrated EA transmitter, array, and associated EA techniques. The AN/SLQ-32(V)7 integrates the new EA countermeasure (SEWIP Block 3) with the AN/SLQ-32(V)6. The AN/SLQ-32(V)6 includes an Electronic Support(ES) receiver (SEWIP Block 2), a High Gain High Sensitivity (HGHS) receiver (SEWIP Block 1B3), a Specific Emitter Identifier (SEI) receiver (SEWIP Block 1B2), display console, and backend electronics. SEWIP Block 3 includes a government software development effort for a SoftKill Coordinator (SKC) to manage EA engagements. SEWIP Block 3 is developing an EW testbed to validate system performance.

SEWIP Block 3 developed and deployed a limited interim capability, starting in 2014, of a focused application of the Naval Research Lab (NRL) Transportable EW Module (TEWM) systems to support CNO Urgent Operational Needs (UON). Block 3T (AN/SLQ-59) is the TEWM system supporting the 7th fleet UON. TEWM Speed to Fleet (STF) (AN/SLQ-62) is the TEWM system supporting the 6th fleet UON. A capability enhancement upgrade for the AN/SLQ-62 will be developed in FY2017.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: SEWIP Block 3 Government Engineering	13.480	20.008	16.517	0.000	16.517
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					
- Completed Preliminary Design.					
- Commenced support of Engineering Development Model (EDM) hardware and software development and integration.					
- Conducted initial IBR for E&MD.					
- Supported CDR and continued systems engineering activities for detailed design.					
- Continued EW testbed model development and verification/validation of model performance.					
- Continued integrated topside design activities with multiple ship classes.					
- Supported platform integration activities to ensure compatibility with AEGIS and SSDS Combat Systems.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3321. / *SEWIP Block 3*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Supported SKC integration activities with AEGIS ACB-16 Combat System. - Completed support for SKC software development for radar cued engagements. NOTE 1: The E&MD contract option was exercised in October 2015 (FY16), not the end of FY15 as shown at PB17. The accomplishment for support of EDM hardware and software development was added to reflect the Government work associated with the exercise of the E&MD Option. Note 2: FY16 Government engineering was reduced due to increased requirements for system development and SKCS build/delivery.					
FY 2017 Plans: - Continue supporting Engineering Development Model (EDM) hardware and software development and integration. - Commence Milestone C planning and preparation. - Commence test planning for Formal Qualification Testing (FQT), Operational Assessment (OA), Block 3 Stand-Alone Operation, and Threat Engagements. - Commence test facilities planning at Wallops Island and implementation of test facilities infrastructure improvements (includes power handling upgrades, cooling infrastructure, antenna mounting platform, cabling, connections, security fencing) - Commence procurement of special test equipment (includes Combat Electromagnetic Environment Simulator, Techniques Generator, command and control test trailer, and referee receiver) - Continue EW testbed model development and verification/validation of model performance. - Continue integrated topside design activities with multiple ship classes. - Commence development and procurement of test assets for Initial Operational Test and Evaluation (IOT&E). - Support platform integration activities to ensure compatibility with AEGIS and SSDS Combat Systems. - Initiate and complete support to SKC builds 2, 3, and 4 software development for EA functionality. - Support Delta Critical Design Review (CDR) and conduct delta Integrated Baseline Review (IBR). - Support LRIP Long Lead Material (LLM) authorization. OCO: - N/A					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3321. / *SEWIP Block 3*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue supporting Engineering Development Model (EDM) hardware and software development and integration. - Continue preparations and conduct Milestone C. - Complete test planning for FQT, OA, Block 3 Stand-Alone Operation, and Threat Engagements - Support FQT and conduct OA. - Complete implementation of Wallops Island test facilities infrastructure improvements (includes power handling upgrades, cooling infrastructure, antenna mounting platform, cabling, connections, security fencing). - Complete procurement of special test equipment (includes Combat Electromagnetic Environment Simulator, Techniques Generator, command and control test trailer, and referee receiver). - Continue EW testbed model development and verification/validation of model performance. - Continue integrated topside design activities with multiple ship classes. - Continue development and procurement of test assets for Initial Operational Test and Evaluation (IOT&E). - Commence planning and development of training curriculum. - Support platform integration activities to ensure compatibility with AEGIS and SSDS Combat Systems. - Initiate and complete support to SKC builds 5, 6, and 7 software development for EA functionality. ***FY 2018 OCO Plans:*** N/A					
Title: SEWIP Block 3 Development	54.978	42.052	20.813	0.000	20.813
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Completed Preliminary Design - Commenced EDM hardware and software development and integration. - Ordered Long Lead Material Items for EDM build. - Continued integrated topside design activities with multiple ship classes. - Commenced support for model and simulation development for EW testbed. - Continued integration activities to ensure compatibility with AEGIS and SSDS Combat Systems. - Supported initial Integrated Baseline Review (IBR) for E&MD. - Conducted CDR.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3321. / *SEWIP Block 3*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
NOTE 3: FY16 system development increase due to antenna design complexity and higher volume and cost of Long Lead Material (LLM) than originally planned. ***FY 2017 Plans:*** - Continue EDM hardware and software development and integration. - Conduct Delta CDR and support the delta IBR. - Commence test planning for FQT and OA. - Continue integrated topside design activities with multiple ship classes. - Continue support for model and simulation development for EW testbed. - Continue integration activities to ensure compatibility with AEGIS and SSDS Combat Systems. OCO: - N/A ***FY 2018 Base Plans:*** - Continue EDM hardware and software development and integration. - Conduct FQT and support OA. - Continue integrated topside design activities with multiple ship classes. - Continue support for model and simulation development for EW testbed. - Continue platform integration activities to ensure compatibility with AEGIS and SSDS Combat Systems. - Commence Surface Electronic Warfare Team Trainer (SEWTT) EA functionality development for AN/SLQ-32(V)7. ***FY 2018 OCO Plans:*** N/A					
Title: Transportable EW Module (TEWM) Speed To Fleet (STF) (AN/SLQ-62) Development	0.000	0.200	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - N/A ***FY 2017 Plans:*** - Develop capability enhancement upgrade for TEWM Speed To Fleet (STF) (AN/SLQ-62) upgrade. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3321. / *SEWIP Block 3*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 OCO Plans:*** N/A					
Title: TEWM Speed to Fleet (STF) (AN/SLQ-62) Systems Engineering ***Articles:*** ***FY 2016 Accomplishments:*** - N/A ***FY 2017 Plans:*** - Complete TEWM Speed To Fleet (STF) (AN/SLQ-62) systems engineering, integration, and test. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	0.000 -	0.300 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	68.458	62.560	37.330	0.000	37.330

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2312: *AN/SLQ-32*	259.271	274.892	240.433	-	240.433	399.516	533.644	709.028	486.957	Continuing	Continuing

Remarks

D. Acquisition Strategy

SEWIP will develop block upgrades to SLQ-32 based on integrating technology advances and adding functional capabilities in an incremental fashion. Each block and sub-block will be developed and contracted in an individual yet coordinated and overlapping fashion. Specifically, SEWIP Block 3 involves the transitioning and leveraging of work performed under the Integrated Topside (INTOP) program sponsored by ONR, which focused on designing/architecting an integrated Electronic Attack (EA), Information Operations (IO), and Line of Site (LOS) Comms system for Naval Surface Platforms. SEWIP Block 3 also leverages work performed under the TEWM program that is sponsored by NRL that focuses on technique development and active engagement analysis/modeling for Naval surface combatants. TEWM includes Block 3T (AN/SLQ-59) system supporting the 7th fleet UON and TEWM STF (AN/SLQ-62) system supporting the 6th fleet UON.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3321. / *SEWIP Block 3*

E. Performance Metrics

Achieve Block 3 Milestone (MS) B.
Complete Block 3T and Speed to Fleet (STF) development.
Complete Block 3T and STF integration and testing.
Award Preliminary Design Contract.
Conduct System Functional Review (SFR) and System Requirements Review (SRR).
Conduct Preliminary Design Review (PDR).
Exercise Engineering & Manufacturing Development (E&MD) option.
Conduct Critical Design Review (CDR).
Conduct Delta CDR.
Achieve Block 3 MS C / Low Rate Initial Production (LRIP) Decision Review (DR).
Complete Formal Qualification Testing (FQT).
Complete Operational Assessment (OA).
Complete Test Readiness Review (TRR).
Complete TECHEVAL.
Complete Initial Operational Test & Evaluation (IOT&E).
Achieve Block 3 Full Rate Production (FRP) DR.
Complete Follow-on Operational Test & Evaluation (FOT&E).

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 3321. / *SEWIP Block 3*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 3 Technology Demonstration	SS/CPFF	Northrop Grumman: Linthicum, MD : Raytheon: Tewksbury, MA	37.195	0.000		0.000		0.000		-		0.000	0.000	37.195	-
Block 3T Primary Hardware Development	C/CPFF	ITT Exelis : Alexandria, VA	54.624	0.000		0.000		0.000		-		0.000	0.000	54.624	-
Block 3 SEWTT Development	SS/CPFF	EWA-GSI : Fairmont, WV	1.619	0.000		0.000		0.100	Nov 2017	-		0.100	Continuing	Continuing	Continuing
TEWM STF Primary Hardware Development	WR	NRL : Washington, DC	7.691	0.000		0.200	Nov 2016	0.000		-		0.000	0.000	7.891	-
Block 3 Preliminary Design/E&MD	C/CPIF	Northrop Grumman : Baltimore, MD	18.341	54.978	Feb 2016	42.052	Oct 2016	20.713	Oct 2017	-		20.713	Continuing	Continuing	Continuing
		Subtotal	119.470	54.978		42.252		20.813		-		20.813	-	-	-

Remarks

FY16 system development increase due to antenna design complexity and higher volume and cost of Long Lead Material (LLM) than originally planned.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 3 Integrated Logistics Support	WR	NSWC Crane : Crane, IN	8.252	1.000	Jan 2016	2.270	Oct 2016	2.200	Nov 2017	-		2.200	Continuing	Continuing	Continuing
Block 3 Integrated Logistics Support	WR	NSWC Carderock : Bethesda, MD	0.133	0.032	Mar 2016	0.000		0.000		-		0.000	0.000	0.165	-
Block 3 Integrated Logistics Support	WR	NAVSEALOGCEN : Mechanicsburg, PA	0.000	0.171	Sep 2016	0.098	Apr 2017	0.210	Nov 2017	-		0.210	Continuing	Continuing	Continuing
Block 3 Government Engineering Support	WR	NSWC Dahlgren : Dahlgren, VA	19.829	1.558	Jan 2016	2.188	Oct 2016	1.750	Nov 2017	-		1.750	Continuing	Continuing	Continuing
Block 3 Government Engineering Support	WR	NSWC Crane : Crane, IN	6.113	0.705	Jan 2016	0.889	Nov 2016	0.700	Nov 2017	-		0.700	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 3321. / *SEWIP Block 3*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 3 Government Engineering Support	WR	NRL : Washington, DC	16.953	1.827	Feb 2016	2.501	Nov 2016	1.800	Nov 2017	-		1.800	Continuing	Continuing	Continuing
Block 3 Government Engineering Support	SS/CPFF	APL : Laurel, MD	21.465	1.772	Jan 2016	2.416	Nov 2016	1.100	Nov 2017	-		1.100	Continuing	Continuing	Continuing
Block 3 Government Engineering Support	WR	MIT-LL : Cambridge, MA	4.681	0.126	Jun 2016	0.000		0.132	Nov 2017	-		0.132	Continuing	Continuing	Continuing
Block 3 Government Engineering Support	WR	GTRI : Atlanta, GA	1.040	0.000		0.000		0.000		-		0.000	0.000	1.040	-
Block 3 Feasibility Studies	C/BA	BIW : Bath, ME	0.039	0.210	Apr 2016	0.276	Jan 2017	0.000		-		0.000	0.000	0.525	-
Block 3 Platform Integration Studies	C/BA	Norfolk Naval Shipyard (NNSY) : Norfolk, VA	0.040	0.000		0.000		0.000		-		0.000	0.000	0.040	-
Block 3 Platform Integration Studies	C/BA	SUPSHIP Gulf Coast : Pascagoula, MS	0.062	0.000		0.000		0.000		-		0.000	0.000	0.062	-
Block 3 Platform Integration Studies	C/BA	NSWC Philadelphia : Philadelphia, PA	0.000	0.033	Jun 2016	0.111	Apr 2017	0.000		-		0.000	0.000	0.144	-
Block 3 Platform Integration Studies	C/BA	NAVSEA 05 (Alion) : Washgington, DC	0.000	0.297	May 2016	0.000		0.000		-		0.000	0.000	0.297	-
Block 3 Platform Integration Studies	C/BA	NAVSEA 05 (CSRA) : Washington, DC	0.000	0.149	May 2016	0.000		0.000		-		0.000	0.000	0.149	-
Block 3 Platform Integration Studies	C/BA	IWS 1.0 : Washington, DC	0.000	0.000		0.111	May 2017	0.000		-		0.000	0.000	0.111	-
Block 3T Systems Engineering	WR	NRL : Washington, DC	20.532	0.000		0.000		0.000		-		0.000	0.000	20.532	-
TEWM STF Systems Engineering	WR	NRL : Washington, DC	5.691	0.000		0.050	Nov 2016	0.000		-		0.000	0.000	5.741	-
TEWM STF Systems Engineering	WR	NSWC Crane : Crane, IN	0.329	0.000		0.000		0.000		-		0.000	0.000	0.329	-
Block 3 Platform Integration Studies	C/BA	Lockheed Martin : Moorstown, NJ	0.000	0.000		0.554	Jan 2017	0.394	Nov 2017	-		0.394	0.000	0.948	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3321. / *SEWIP Block 3*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	105.159	7.880		11.464		8.286		-		8.286	-	-	-

Remarks

FY16 Government engineering was reduced due to increased funding requirements for system development and SKCS build/delivery.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 3 Test Planning/T&E Events	WR	NSWC Dahlgren : Dahlgren, VA	3.701	0.193	Jan 2016	0.448	May 2017	0.750	Nov 2017	-		0.750	Continuing	Continuing	Continuing
Block 3 Test Planning/T&E Events	WR	NSWC Crane : Crane, IN	2.161	0.150	Jan 2016	0.421	May 2017	0.650	Nov 2017	-		0.650	Continuing	Continuing	Continuing
Block 3 Test Planning/T&E Events	WR	NRL : Washington, DC	7.368	2.000	Feb 2016	3.193	May 2017	2.050	Nov 2017	-		2.050	Continuing	Continuing	Continuing
Block 3 Test Planning/T&E Events	WR	APL : Laurel, MD	0.000	0.350	Mar 2016	1.413	Feb 2017	1.000	Nov 2017	-		1.000	0.000	2.763	-
Block 3 Test Planning/T&E Events	WR	COMOPTEVFOR : Norfolk, VA	0.165	0.000		0.065	May 2017	0.250	Nov 2017	-		0.250	Continuing	Continuing	Continuing
Block 3 Test Planning/T&E Events	WR	Surface Combat Systems Center : Wallops Island, VA	0.000	0.000		1.105	Oct 2016	0.982	Nov 2017	-		0.982	0.000	2.087	-
TEWM Testing	WR	NRL : Washington, DC	10.641	0.000		0.000		0.000		-		0.000	0.000	10.641	-
TEWM STF Testing	WR	NRL : Washington, DC	4.199	0.000		0.250	May 2017	0.000		-		0.000	0.000	4.449	-
		Subtotal	28.235	2.693		6.895		5.682		-		5.682	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 3321. / *SEWIP Block 3*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block 3 Program Management Support	C/CPIF	SPA (SEAPORT) : Washington, DC	18.883	0.000		0.000		0.000		-		0.000	0.000	18.883	-
Block 3 Program Management Support	C/CPIF	TMB (SEAPORT) : Washington, DC	0.154	0.816	Apr 2016	0.538	Jan 2017	0.770	Nov 2017	-		0.770	Continuing	Continuing	Continuing
Block 3 Program Management Support	C/CPIF	CACI (SEAPORT) : Washington, DC	0.000	0.422	May 2016	0.252	Jan 2017	0.475	Nov 2017	-		0.475	Continuing	Continuing	Continuing
Block 3 Program Management Support	C/CPIF	Strategic Insight (SEAPORT) : Washington, DC	0.044	0.000		0.000		0.000		-		0.000	0.000	0.044	-
Block 3 Program Management Support	SS/CPIF	SPA : Washington, DC	0.000	1.138	Mar 2016	0.418	Dec 2016	0.000		-		0.000	0.000	1.556	-
Block 3 Program Management Support	TBD	TBD : TBD	0.000	0.000		0.428	May 2017	0.855	Nov 2017	-		0.855	Continuing	Continuing	Continuing
Block 3 Program Management Support	WR	NSWC Dahlgren : Dahlgren, VA	4.051	0.100	Jan 2016	0.100	Jan 2017	0.111	Nov 2017	-		0.111	Continuing	Continuing	Continuing
Block 3 Travel	WR	NAVSEA Program Office : Washington, DC	0.294	0.050	Jan 2016	0.050	Jan 2017	0.080	Nov 2017	-		0.080	Continuing	Continuing	Continuing
Block 3 Program Management Support	WR	NRL : Washington, DC	1.882	0.100	Feb 2016	0.101	Jan 2017	0.108	Nov 2017	-		0.108	Continuing	Continuing	Continuing
Block 3 Program Management Support	MIPR	DISA : Laurel, MD	0.440	0.227	Jun 2016	0.000		0.000		-		0.000	0.000	0.667	-
Block 3 Program Management Support	WR	NSWC Crane : Crane, IN	1.621	0.054	Jan 2016	0.062	Jan 2017	0.150	Nov 2017	-		0.150	Continuing	Continuing	Continuing
		Subtotal	27.369	2.907		1.949		2.549		-		2.549	-	-	-

Remarks

The TBD for Program Management Support will be competitively awarded in 3rd quarter FY 2017.

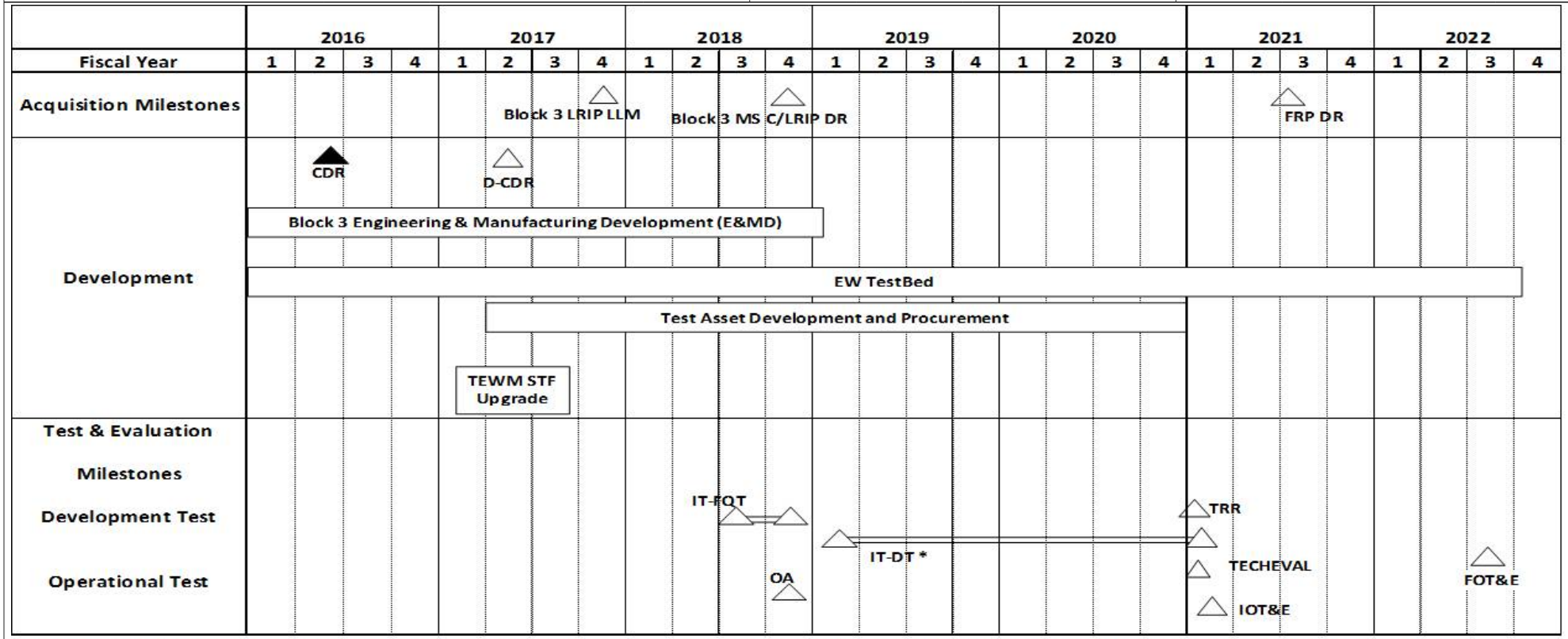
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	280.233	68.458		62.560		37.330		-		37.330	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	Project (Number/Name) 3321. / *SEWIP Block 3*	

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3321. / *SEWIP Block 3*



* Includes the folowing test events: : Land Test-Block 3 Stand-Alone Operation, Flight Test-Threat Engagements (over water), IA / Maint Demo (Dry Run), CMS Integration (Aegis), CMS Integration (SSDS), DDG-51 Combat System Certification (Aegis Integration), CVN-78 Combat System Certification (SSDS Integration), Environment, EMI, RCS, and Shock Tests

Acronyms: CDR-Critical Design Review; D-CDR - Delta CDR; DR-Decision Review; DT-Developmental Test; FOT&E-Follow-on Operational Test & Evaluation; FQT-Formal Qualification Testing; FRP-Full Rate Production; IOT&E-Initial Operational Test & Evaluation; IT-Integrated Testing; LLM-Long Lead Material; LRIP-Low Rate Initial Production; MS-Milestone; OA-Operational Assessment; STF-Speed To Fleet; TEWM-Transportable EW Module; TRR-Test Readiness Review

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604757N / *Ship Self Def (Engage: Soft Kill/EW)*	**Project (Number/Name)** 3321. / *SEWIP Block 3*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3321.L24				
Block 3 Engineering and Manufacturing Development (E&MD)	1	2016	4	2018
EW Testbed	1	2016	3	2022
CDR	2	2016	2	2016
TEWM Speed to Fleet Upgrade	1	2017	3	2017
Test Asset Development and Procurement	2	2017	4	2020
Delta - CDR	2	2017	2	2017
Block 3 LRIP LLM	4	2017	4	2017
Block 3 Integrated Testing - FQT	3	2018	4	2018
Block 3 Operational Assessment	4	2018	4	2018
Block 3 MS C/LRIP DR	4	2018	4	2018
Block 3 Integrated Testing - DT	1	2019	1	2021
Block 3 TRR	1	2021	1	2021
Block 3 TECHEVAL	1	2021	1	2021
Block 3 IOT&E	1	2021	1	2021
Block 3 FRP DR	3	2021	3	2021
Block 3 FOT&E	3	2022	3	2022

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604761N *I Intelligence Engineering*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	0.000	2.053	13.029	34.855	-	34.855	32.122	30.371	30.560	31.171	Continuing	Continuing
3103: *Intelligence Engineering*	0.000	2.053	13.029	4.355	-	4.355	4.422	4.471	4.560	4.773	Continuing	Continuing
3419: *Technical Algorithm Development*	0.000	0.000	0.000	19.400	-	19.400	19.600	19.800	19.900	20.298	Continuing	Continuing
3421: *Non-Kinetic Countermeasure Support*	0.000	0.000	0.000	11.100	-	11.100	8.100	6.100	6.100	6.100	Continuing	Continuing

A. Mission Description and Budget Item Justification

The details of this program element are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	2.053	11.029	15.455	-	15.455
Current President's Budget	2.053	13.029	34.855	-	34.855
Total Adjustments	0.000	2.000	19.400	-	19.400
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	2.000	19.400	-	19.400

Change Summary Explanation

The details of this program element are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604761N / *Intelligence Engineering*	Project (Number/Name) 3103 / *Intelligence Engineering*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3103: *Intelligence Engineering*	0.000	2.053	13.029	4.355	-	4.355	4.422	4.471	4.560	4.773	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The details of this program element are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604761N / *Intelligence Engineering*	Project (Number/Name) 3419 / *Technical Algorithm Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3419: *Technical Algorithm Development*	0.000	0.000	0.000	19.400	-	19.400	19.600	19.800	19.900	20.298	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The details of this program element are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604761N / *Intelligence Engineering*	Project (Number/Name) 3421 / *Non-Kinetic Countermeasure Support*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3421: *Non-Kinetic Countermeasure Support*	0.000	0.000	0.000	11.100	-	11.100	8.100	6.100	6.100	6.100	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The details of this program element are classified SECRET//NOFORN and are submitted annually to Congress in the classified budget justification books.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604771N *I Medical Development*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	120.235	24.658	9.221	9.353	-	9.353	9.613	9.813	9.998	10.195	Continuing	Continuing
0933: *Medical/Dental Equipment Dev*	18.959	9.108	9.221	9.353	-	9.353	9.613	9.813	9.998	10.195	Continuing	Continuing
9999: *Congressional Adds*	101.276	15.550	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	116.826

A. Mission Description and Budget Item Justification

The purpose of this program is to develop biomedical equipment and related techniques to reduce morbidity; to enhance the logistic feasibility of modern medical care for combat casualties; to sustain casualties for evacuation to fixed medical facilities for definitive care; and to ensure that personnel are medically qualified for military duty. Each work unit undertaken in this project has a military requirement. Efforts are justified based upon military payoff and cost benefit. There is a strong potential for dual use, technology transfer, and biotechnology firm/industry participation in the projects.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	25.291	9.220	9.313	-	9.313
Current President's Budget	24.658	9.221	9.353	-	9.353
Total Adjustments	-0.633	0.001	0.040	-	0.040
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.633	0.000			
• Program Adjustments	0.000	0.001	0.000	-	0.000
• Rate/Misc Adjustments	0.000	0.000	0.040	-	0.040

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2016	FY 2017
Project: 9999: *Congressional Adds*		
Congressional Add: *Military Dental Research*	5.895	0.000
Congressional Add: *Wound Care Research (transferred from Defense Health Program)*	9.655	0.000
Congressional Add Subtotals for Project: 9999	15.550	0.000
Congressional Add Totals for all Projects	15.550	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604771N / *Medical Development*	Project (Number/Name) 0933 / *Medical/Dental Equipment Dev*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0933: *Medical/Dental Equipment Dev*	18.959	9.108	9.221	9.353	-	9.353	9.613	9.813	9.998	10.195	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The purpose of this program is to develop biomedical equipment and related techniques to reduce morbidity; to enhance the logistic feasibility of modern medical care for combat casualties; to sustain casualties for evacuation to fixed medical facilities for definitive care; and to ensure that personnel are medically qualified for military duty. Each work unit undertaken in this project has a military requirement. Efforts are justified based upon military payoff and cost benefit. There is a strong potential for dual use, technology transfer, and biotechnology firms/industry participation in the projects.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Medical/Dental Equipment Dev	9.108	9.221	9.353	0.000	9.353
Articles:	-	-	-	-	-

FY 2016 Accomplishments:

-Continued support of ongoing clinical trial effort to test, for safety and efficacy, a militarily relevant malaria vaccine regimen utilizing a promising vaccine candidate. Initiate validation of Current Good Manufacturing Practices (CGMP) support for vaccine production scale up and development of advanced vaccine production in support of Phase III clinical trials.

-Continued field user evaluation and validation of Individual Fatigue-Based Scheduling and Countermeasure System that predicts, detects, and prevents or mitigates fatigue during periods of high risk. Individualized performance risk will be predicted and prevented by providing individual fatigue optimized schedules and mitigation strategies for the operating forces.

-Continue fatigue mitigation and validation of scheduling tools to include validation of an alternative watchstanding schedule on Naval Surface Combatants in support of an individualized fatigue-mitigated scheduling.

-Continued controlled efficacy study of an intradermal vaccine to an experimental challenge model of Enterotoxigenic Escherichia coli (ETEC). Completed analysis of third clinical trial cohort.

-Continued development of transitioned Future Naval Capability Program (FNC) products and other efforts for massive hemorrhage control; and completed cerebral perfusion pressure management initiative.

-Continued Naval Expeditionary Health Service Support. Primary focus includes: 1) Support of shore based and afloat Capabilities-Based Military Treatment Facility consistent with medical mission module evolving concepts; and 2) Enhancing casualty treatment capabilities while reducing the overall logistics burden.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604771N / *Medical Development*	**Project (Number/Name)** 0933 / *Medical/Dental Equipment Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
-Continued joint development projects with MARCORSYSCOM acquisition for medical products and equipment, to include completion of test and evaluation following improved ruggedization of the Mobile Oxygen Ventilation and External Suction (MOVES) Superior Life-Saving Capabilities (SLC) Portable Life Support System. -Completing initiative to validate an Electroencephalographic (EEG) system for transition to the clinical settings at the Naval Medical Center, San Diego and to the other Computer Assisted Rehabilitation Environment (CAREN) systems within the Department of Defense. -Initiated Authorized Medical Allowance List (AMAL) and Authorized Dental Allowance List (ADAL) design for medical mission module in support of Humanitarian Assistance and Disaster Relief (HADR) mission. -Completed integration efforts in wound closure and improvement of diagnostic measures in an Osseo-integration device.					
FY 2017 Plans: -Continue to augment efforts with the ongoing clinical trial effort to test, for safety and efficacy, a militarily relevant malaria vaccine regimen utilizing a promising vaccine candidate. Continue with validation of manufacturing support for vaccine production scale up. -Continue utilization validation of Individual Fatigue-Based Scheduling and Countermeasure System that predicts, prevents, detects, and mitigates periods of high risk associated with fatigue. Individualized performance risk will be predicted and prevented by providing individual fatigue optimized schedules and mitigation strategies. -Continue fatigue mitigation and validation of scheduling tools to include validation of an alternative watchstanding schedule on Naval Surface Combatants in support of an individualized fatigue-mitigated scheduling. -Continue development of transitioned FNC products and technologies for management and control of moderate to severe hemorrhage. -Continue Naval Expeditionary Health Service Support efforts. Primary focus includes: 1) Enhancing casualty treatment capabilities while reducing the overall logistics burden; 2) Continue the extended distances and time considerations; and 3) Continue Enroute care, patient transport and trauma care systems associated with the time distance continuum in a sea base environment. -Continue joint development projects with MARCORSYSCOM acquisition for medical products and equipment. -Complete Authorized Medical Allowance List (AMAL) and Authorized Dental Allowance List (ADAL) design for medical mission module in support of Humanitarian Assistance and Disaster Relief (HADR) mission and transition to MSC and Fleet Forces.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604771N / *Medical Development*	**Project (Number/Name)** 0933 / *Medical/Dental Equipment Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
-Initiate support of phage therapy to combat antibiotic resistant bacterial infections: 1) Initiate Phase I/II clinical trials; 2) Coordinate Clinical Research Organization (CRO) over site and management of clinical data; and 3) Initiate scale-up and commercialization. ***FY 2018 Base Plans:*** -Continue to augment efforts with the ongoing clinical trial effort to test, for safety and efficacy, a militarily relevant malaria vaccine regimen utilizing a promising vaccine candidate. Continue with validation of manufacturing support for vaccine production scale up. -Continue utilization validation of Individual Fatigue-Based Scheduling and Countermeasure System that predicts, prevents, detects, and mitigates periods of high risk associated with fatigue. Individualized performance risk will be predicted and prevented by providing individual fatigue optimized schedules and mitigation strategies. -Continue fatigue mitigation and validation of scheduling tools to include validation of an alternative watchstanding schedule on Naval Surface Combatants in support of an individualized fatigue-mitigated scheduling. -Continue development of transitioned Future Naval Capability Program (FNC) and other products for management and control of moderate to severe hemorrhage. -Continue Naval Expeditionary Health Service Support. Primary focus includes: 1) Enhancing casualty treatment capabilities while reducing the overall logistics burden; 2) Completion of the extended distances and time considerations; and 3) Continue Enroute care, patient transport and trauma care systems associated with the time distance continuum in a sea base environment. -Continue joint development projects with MARCORSYSCOM acquisition for medical products and equipment. -Continue to support phage therapy to combat antibiotic resistant bacterial infections. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	9.108	9.221	9.353	0.000	9.353

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The acquisition strategy for product lines and products in the Medical Development Program is designed and implemented consistent with the purpose of the particular product and with the nature and size of the investment. The Medical Development Program has a Memorandum of Agreement with the Marine Corps Systems

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604771N / *Medical Development*	**Project (Number/Name)** 0933 / *Medical/Dental Equipment Dev*

Command (Family of Field Medical Equipment) for co-development of products for procurement by the USMC. The acquisition strategy for products involves direct partnership with the acquisition and procurement professionals at Marine Corps Systems Command.

The major Product Areas in the Medical Development Program are: 1) Equipment, 2) Pharmaceuticals/Biologics, and 3) Operational Knowledge/Concepts. The primary Program Areas of Interest are in: 1) Naval Expeditionary Health Services Support (Navy in Terrestrial, Maritime Surface, Submarine, & Aviation Operations), 2) USMC in Expeditionary Operations and 3) Products for battlefield treatment and en route care of Combat Casualties & Combat Trauma, focusing on delivery of care within the seabase and the littoral environment.

For Product Areas 1 and 2, there are two primary acquisition strategies. The first is to test and evaluate for Naval application commercially-developed medical product or candidates in managed trials with the ultimate goal of Food and Drug Administration (FDA) approval. Partnerships with commercial developers promotes developing products of military interest for procurement by the Operating Forces. A second benefit of this strategy is that products are made available across the DoD, Federal Government, and commercial market, thus reducing overall procurement costs. During development, DoD end users are included in the process to the extent possible. The second strategy is to drive a collaborative development process with larger DoD program investments. Navy and Marine Corps needs can be met at lower service cost. This process involves developing in-house or industrial prototypes in government-managed programs to meet Naval needs while meeting regulatory requirements for production and fielding. Both tactics promote development of procurement plans that align product availability with Service integration strategies.

The Third Product Area (Knowledge/Concepts) is focused on the introduction of technologies, techniques, and procedures that enhance medical practice and standards of care for effective delivery of health care and casualty care in the Naval operating environment. These primarily require early involvement of the senior leadership of military medicine, in that the end product of the program is modification of concepts of operations, policy, and/or doctrine. While these are often much smaller investments, they can have a substantial impact on the care of Sailors and Marines; Medical Development Program examples include Navy/USMC Medical Planning Requirement Assessments.

E. Performance Metrics

Successful completion of Milestones/Demonstration Events for individualized project/product roadmap, on time and on budget. Ensuring dependencies across multiple efforts are maintained on schedule are primary metrics.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604771N / *Medical Development*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9999: *Congressional Adds*	101.276	15.550	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	116.826
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

None

A. Mission Description and Budget Item Justification

Congressional Adds

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017
Congressional Add: Military Dental Research ***FY 2016 Accomplishments:*** Continue efforts in cranio-facial injury surveillance; combat dentistry; treatment of maxillofacial injury; dental disease non-battle injuries; oral/facial disease and infection in military personnel. ***FY 2017 Plans:*** N/A	5.895	0.000
Congressional Add: Wound Care Research (transferred from Defense Health Program) ***FY 2016 Accomplishments:*** Continue to develop novel diagnostics and treatments to enhance the care of the wounded warfighter. ***FY 2017 Plans:*** N/A	9.655	0.000
Congressional Adds Subtotals	15.550	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

None

E. Performance Metrics

Not required for Congressional adds.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604777N *I Navigation/Id System*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	528.864	32.339	42.723	92.546	-	92.546	120.792	146.628	83.829	66.832	Continuing	Continuing
0253: *Nav & Electro-Optical Supt*	47.970	7.013	6.992	7.477	-	7.477	36.561	37.158	37.901	38.656	Continuing	Continuing
0676: *Improve ID Development*	34.588	7.261	4.914	2.477	-	2.477	2.470	2.399	2.449	2.499	Continuing	Continuing
0921: *NAVSTAR GPS Equipment*	265.201	16.774	26.965	80.044	-	80.044	79.713	105.125	41.489	23.648	Continuing	Continuing
1253: *Combat Ident System*	181.105	1.291	3.852	2.548	-	2.548	2.048	1.946	1.990	2.029	Continuing	Continuing

A. Mission Description and Budget Item Justification

Reliable and secure navigation and positive identification (ID) systems are essential elements of battle management in the naval environment. The Photonics Imaging System (0253) is a non-hull penetrating replacement for existing optical periscopes. The Photonics Imaging System exploits a wide portion of the electro-magnetic spectrum utilizing advanced Electro-Optic/thermal imaging, and communications intercept/Electronic Warfare Support (ES). The Integrated Submarine Imaging System (ISIS) (0253) is a back fit system to integrate all imaging capabilities on existing submarine classes. The Combat Identification System (CIS) project (1253) for Mark XIIA, and Improved Identification Development (0676) for AN/UPX-29(V), covers the Mark XIIA Mode 5 upgrade to the existing Mark XII family of systems that is Joint and North Atlantic Treaty Organization (NATO) interoperable. Per OSD direction, NATO participation is encouraged and performance data is exchanged to ensure the opportunity for interoperability with allied identification systems is maximized. In addition to distinguishing friend from foe for weapons employment, the Navy requires secure, jam resistant Identification Friend or Foe (IFF) systems for battle group air defense management and air traffic control. Identification is multifaceted and includes information received from several sensors (both cooperative and non-cooperative systems).

Navigation Satellite Timing & Ranging (NAVSTAR) Global Positioning System (GPS) project (0921) is a space-based Positioning, Navigation, and Timing (PNT) system that provides authorized users with secure, worldwide, all weather, three dimensional position, velocity, and precise time data. NAVSTAR GPS supports Anti-Access/ Area Denial (A2AD) by providing Assured PNT (A-PNT) capability to C4ISR and combat systems in standalone and networked architectures throughout air and maritime domains. This project is comprised of four distinct efforts: Air and Sea Navigation Warfare (NAVWAR), GPS-based PNT Service (GPNTS), and GPS Modernization. Research, Development, Testing and Evaluation (RDT&E) funds are used to perform all the non-recurring GPS Surface Ship, Submarine and Aircraft Development, Integration, and Testing efforts in support of NAVSTAR GPS.

The Air and Sea NAVWAR programs were established to provide continued access to GPS information in a denied or impeded electronic environment. Development efforts for both programs provide improvements to various platform type antennas and ensure compatibility with the new Military Code (M-Code) signal. The Air NAVWAR program continues integration efforts using GPS Antenna System (GAS-1), Advanced Digital Antenna Production (ADAP), and other anti-jam antennas on air platforms while investigating smaller anti-jam antennas for space constrained platforms and aircraft with unique requirements. The Sea NAVWAR program integrates Anti-Jam (AJ) antennas onto surface and subsurface platforms. Sea NAVWAR will continue to research the viability of smaller anti-jam antennas for space-constrained platforms and to support the Submarine Anti-Jam GPS Enhancement (SAGE) antenna development which integrates AJ capability into the submarine Multi-Function Mast (OE-538B) antenna system.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604777N *I Navigation/Id System*

GPS Modernization addresses the Navy's future integration of the GPS Directorate Military GPS User Equipment (MGUE) products being developed by the Air Force that will enable the use of new GPS signals. This effort supports Navy compliance with Public Law 111-383 which mandates only M-Code capable receivers are to be procured after FY 2017. GPS Modernization consists of multiple parallel efforts that address the Navy's integration of multiple next generation GPS receivers that provide Naval air, surface, subsurface and weapon platforms improved access to GPS signals in challenged and jamming environments. Modernized GPS receivers will utilize the new M-Code GPS Signal in Space, incorporate enhanced cryptology, deliver greater position and time accuracy, and provide improved protection against signal spoofing. Additionally, GPS Modernization delivers increased GPS anti-jam protection and enables blue force GPS electronic attack.

The GPNTS system is being developed to replace stand-alone AN/WRN-6 receivers, integrated Navigation Sensor System Interface (NAVSSI) systems, and integrated commercial-off-the-shelf GPS systems. Additionally, future capability will migrate toward a Common Computing Environment (CCE) such as Consolidated Afloat Networks Enterprise Services (CANES), and provide a path for the integration of advanced navigation systems and sensors.
JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under Engineering and Manufacturing Development because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	32.456	42.723	70.724	-	70.724
Current President's Budget	32.339	42.723	92.546	-	92.546
Total Adjustments	-0.117	0.000	21.822	-	21.822
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.716	0.000			
• SBIR/STTR Transfer	-0.833	0.000			
• Program Adjustments	0.000	0.000	21.539	-	21.539
• Rate/Misc Adjustments	0.000	0.000	0.283	-	0.283

Change Summary Explanation

Technical:
The increase to Air Navigation Warfare (NAVWAR) in FY 2018 is to integrate anti-jam antennas into select aviation platforms in order to provide assured positioning, navigation and timing (PNT) in a Global Positioning System (GPS) jamming environment and for development and integration of miniaturized NAVWAR antennas in AH-1Z, UH-1Y, MQ-4C and MQ-8B/C.
The increase to GPS-based Positioning, Navigation, and Timing (PNT) Service (GPNTS) in FY 2018 is for development of the Pre-planned Product Improvement (P3I) technology insertion and a configuration modification for smaller platforms.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604777N *I Navigation/Id System*

The increase to GPS Modernization in FY 2018 is to integrate Military Global Positioning System User Equipment (MGUE) into select aviation platforms in order to provide assured positioning, navigation and timing (PNT) in a GPS degraded environment and funds MGUE integration into the following platforms: E-6B, MV-22B, CMV-22B, CH-53K and KC-130J.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604777N / *Navigation/Id System*	Project (Number/Name) 0253 / *Nav & Electro-Optical Supt*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0253: *Nav & Electro-Optical Supt*	47.970	7.013	6.992	7.477	-	7.477	36.561	37.158	37.901	38.656	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The navigation and electro-optical (E-O) support program develops submarine E-O and imagery systems and equipment that will improve submarine imaging capability in the areas of: ship safety, Intelligence, Surveillance and Reconnaissance (ISR), and tactical control (contact management in the littorals). The Department of the Navy established the Integrated Submarine Imaging System (ISIS) to rapidly field the Type 18 periscope, Periscope Acquisition, Tracking, and Ranging with Improved Observation Techniques (PATRIOT) rangefinder, Type 8 Mod 4 Infra-Red (IR) periscope systems, and integrate existing periscope imagery systems into a single imaging system for installation on board SSN 688 class and SEAWOLF class submarines. The ISIS baseline also includes the Imaging System with the Photonics Mast (PM) and all configurations of Low Profile Photonics Mast (LPPM) onboard VIRGINIA and Photonics Mast Variant (PMV) onboard SSGN class submarines. The PM, LPPM, and PMV design exploit a wide portion of the electro-magnetic spectrum through advanced E-O and thermal imaging and Electronic Warfare Support (ES)/ communications intercept. The Common Submarine Imaging System (CSIS) capability development document (CDD), that covers both ISIS and Legacy Imaging systems was approved 22 Dec, 2011. The CDD is used to fully integrate the ISIS program of record into the submarines force rapid Technical Insertion/Advanced Processor Build (TI/APB) process and to incorporate Fleet-endorsed requirements such as the LPPM. Future mast development includes the Task-Oriented Technology Insertion Mast (TOTIM), which will provide 360 degree, non-rotating modular mast with vastly increased capability, reduced maintenance costs and increased development flexibility for new mast sensors.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: ISIS and Photonics common software and hardware capabilities development and obsolescence.	3.053	6.324	5.794	0.000	5.794
Articles:	-	-	-	-	-
FY 2016 Accomplishments: ISIS Technical Insertion (TI) development for LOS ANGELES, SEAWOLF, and VIRGINIA classes. TI and Advanced Processor Build (APB) productionization efforts include incorporation of significant capability increases over previous TIs including Image Fusion, Auto-detection and Image Tracker Algorithms. FY 2016 efforts also include improvements to system software reliability for increased ISIS Operational Availability (Ao).					
FY 2017 Plans: ISIS Technical Insertion (TI) development for LOS ANGELES, SEAWOLF, VIRGINIA, and SSGN classes. TI and Advanced Processor Build (APB) productionization efforts include incorporation of significant capability increases over previous TIs including Automatic Classification and De-interlacing as well as integration of unique LPPM capabilities. FY 2017 efforts include continued improvements to system and software reliability					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0253 / *Nav & Electro-Optical Supt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and increased ISIS Operational Availability (Ao)and LPPM development efforts to address backlog of candidate capabilities to incorporate into ISIS. ***FY 2018 Base Plans:*** ISIS Technical Insertion (TI) development for LOS ANGELES, SEAWOLF, VIRGINIA, and SSGN classes. TI and Advanced Processor Build (APB) productionization efforts include incorporation of significant capability increases over previous TIs including Automatic Target Recognition, Auto Navigation Fix and Augmented Reality for Navigation as well as integration of unique LPPM capabilities. FY 2018 efforts include continued improvements to system and software reliability, modifications required to the ISIS TI-20 baseline integrated with TOTIM (inboard architecture, data storage, display and processing capabilities development) and increased ISIS Operational Availability (Ao). ***FY 2018 OCO Plans:*** N/A					
Title: Imaging Systems Test Efforts. ***Articles:*** ***FY 2016 Accomplishments:*** Cyber Security Operational Testing ***FY 2017 Plans:*** Technical Insertion Build 14 / APB 13 ITRR - Advanced Processor Build 13 Interim Test Readiness Review covering trainer test procedures, Requirements Traceability Verification Matrix (RTVM) to verify specification requirements, Recorded Reliability & Maintainability data, and other requirements covered in the TRR. ***FY 2018 Base Plans:*** Technical Insertion Build 14 / APB 13 VA OT - Advanced Processor Build 13 Virginia Class Operational Testing covering capability increases to previous algorithm builds including 360 Degree Image Stitching, LACE Night Modification (VA Class Only)and Super Position. ***FY 2018 OCO Plans:*** N/A	0.598 -	0.668 -	0.681 -	0.000 -	0.681 -
Title: Task-Oriented Technology Insertion Mast (TOTIM) ***Articles:*** ***FY 2016 Accomplishments:***	0.000 -	0.000 -	1.002 -	0.000 -	1.002 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0253 / *Nav & Electro-Optical Supt*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Develop Task Oriented Tech Insertion Mast (TOTIM), and mission modules. Specific efforts include: development of TOTIM and common interface between mast modules. ***FY 2018 OCO Plans:*** N/A					
Title: Low Profile Photonics Mast	3.362	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Complete LPPM Production Baseline Design ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	7.013	6.992	7.477	0.000	7.477

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN/201300: *Photonics Mast*	38.774	38.909	39.648	-	39.648	40.442	41.251	21.038	42.918	Continuing	Continuing
• OPN/0831: *Sub Periscopes & Imaging Equip.*	63.109	0.000	0.029	-	0.029	0.024	0.027	0.028	0.029	0.000	686.724
• RDT&E/0604558N: *VIRGINIA Class Design Development*	3.000	3.000	3.000	-	3.000	3.000	3.000	3.000	3.000	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0253 / *Nav & Electro-Optical Supt*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E/0603562N: *Advanced Submarine Support Equipment (ASSEP)*	4.103	4.429	4.143	-	4.143	4.403	4.725	4.828	4.925	Continuing	Continuing
• OPN/0840: *Sub Periscope, Imaging Equip. and Supt Equip Program*	0.000	154.421	135.798	-	135.798	191.424	243.032	228.266	219.971	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Acquisition Strategy for AN/BVY-1 Integrated Submarine Imaging System (ISIS) is dated 07 Jul 2003. The Aquisition Program Baseline Agreement for ISIS Advanced Processor Builds 11, 13 and 15 is dated 07 Mar 2013. The Single Acquisition Management Plan (SAMP) for the LPPM is dated 01 Jul, 2013. The ISIS will provide mission critical, all weather, visual, and electronic search, digital image management, indication, warning, and platform architecture interface capabilities for SSN 688, SSN 21, SSN 774 and SSGN class submarines. The Single Acquisition Management Plan (SAMP) for the TOTIM approval is planned in 3rd quarter FY17.

E. Performance Metrics

Successful application of system engineering processes. Design and development of improvements. The Rapid Development and Deployment (RDD) program goal is to respond to urgent operational needs within 30 days and provide for rapid development and fielding of prototype solutions within 270 days.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604777N / *Navigation/Id System*	Project (Number/Name) 0676 / *Improve ID Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0676: *Improve ID Development*	34.588	7.261	4.914	2.477	-	2.477	2.470	2.399	2.449	2.499	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Reliable and secure navigation and positive identification (ID) systems are essential elements of battle management in the naval environment. In addition to providing platform identification for weapons employment, the Navy requires secure, jam resistant Identification Friend or Foe (IFF) systems for battle group air defense management and Air Traffic Control. The Improved ID Development project addresses the Mark XIIA Mode 5 and Mode S upgrades to the existing AN/UPX-29(V) Mark XII family of systems that is Joint and North Atlantic Treaty Organization interoperable. The AN/UPX-29(V) Interrogator System is comprised of the Interrogator Set AN/UPX-24(V), OE-120()/UPX Antenna Group, and Mark XII or Mark XIIA equipment such as AN/UPX-37, AN/UPX-41(C) or AN/UPX-45(C) Digital Interrogators and associated equipment. Additionally, the Improved ID Development project may include product improvements designed to be installed through upgrade and deficiency correction studies, which in turn become engineering changes to other IFF solutions.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: AN/UPX-29 (V) - OE-120()/UPX Antenna Tech Refresh	7.261	4.602	1.720	0.000	1.720
Articles:	-	-	1	-	1
Description: Engineering and integration development for antenna group OE-120()/UPX antenna tech refresh. Develop design studies and Analysis of Alternatives, draft specifications, and perform system development and integration efforts and support mission requirements, to include engineering investigations and Engineering Change Proposal (ECP) development to support mission readiness for IFF systems.					
FY 2016 Accomplishments: Completed design trade studies, and preliminary design review. Identified and ordered long lead items. Initiated detailed design. Initiated test equipment design and update. Initiated Integration and Test (I&T) qualification plan. Scheduled range tests for Phase Shifter and Power Divider assemblies. Scheduled Critical Design Review.					
FY 2017 Plans: Complete software coding and development testing. Complete procurement of non-long lead items. Complete test equipment design and update. Complete Integration and Test (I&T) qualification plan. Build and conduct unit level I&T activities on OE-120()/UPX Tech Refresh Engineering and Development Model. Initiate system level Integration and Test and qualification testing activities. Conduct Test Readiness Review.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0676 / *Improve ID Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Complete development of OE-120()/UPX retrofit kit. Complete qualification testing. Complete and deliver the Engineering Development Model (EDM). ***FY 2018 OCO Plans:*** N/A					
Title: Mark XIIA Mode 5 and Mode S Improvement for AN/UPX-29(V) ***Articles:*** ***Description:*** Engineering, development, and integration of improvements to Mark XIIA Shipboard Identification Friend or Foe (IFF) Systems, including, but not limited to the AN/UPX-29(V) Interrogator System, which is comprised of the Interrogator Set AN/UPX-24, OE-120()/UPX Antenna Group, and Mark XII or Mark XIIA equipment such as AN/UPX-37, AN/UPX-41 or AN/UPX-45 Digital Interrogators. Funds development and integration of Mark XIIA Mode 5 and Mode Select (S) Improvements to the AN/UPX-29(V) systems on CG47, DDG51, LHD1, LPD17, LHA6, and CVN68, CVN78, and future ship classes. Correct software and performance deficiencies from Integrated Test and Operational Test, Aegis, and other Combat System Integration events to support Combat System integration with Aegis Weapon Systems (AWS), Ship Self Defense System (SSDS), Advanced Combat Direction System (ACDS), or Air Traffic Control Systems using Mark XIIA equipment to include engineering investigations, Engineering Change Proposal development, and testing. Provides core Integrated Logistics Support documentation; formalizes hardware/software configuration: finalizes technical/ design data, resolves testing anomalies, and integrates with shipboard training systems. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Conduct AN/UPX-29(V) Interrogator System integration testing with Mode 5/Mode S capable AN/UPX-45 Digital Interrogator in preparation for deployment to Aegis and Ship Self Defense System (SSDS) platforms. Support logistics and technical data management for the OE-120()/UPX Antenna Group retrofit kit development, qualification test, and Engineering Development Model (EDM) delivery. ***FY 2018 OCO Plans:*** N/A	0.000 -	0.000 -	0.334 -	0.000 -	0.334 -
Title: AN/UPX-29(V) Management Support	0.000	0.312	0.423	0.000	0.423

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0676 / *Improve ID Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
Description: Engineering and Program Management of the AN/UPX 29 (V). Perform system integration efforts. ***FY 2016 Accomplishments:*** Supported Systems Engineering Technical Reviews for OE-120/UPX according to the tech refresh ECP schedule. Completed events including the Preliminary and Critical Design Reviews (PDR/CDR). ***FY 2017 Plans:*** Support Systems Engineering Technical Reviews for OE-120/UPX according to the tech refresh ECP schedule. Monitor progress from CDR to EDM delivery in preparation for production line updates. ***FY 2018 Base Plans:*** Support logistics and technical data management for the AN/UPX 29 (V) Mode 5/Mode S integration and OE-120/UPX retrofit kit development, qualification test, and Engineering Development Model (EDM) delivery. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	7.261	4.914	2.477	0.000	2.477

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2851: *ID Systems*	29.676	22.177	21.226	-	21.226	26.792	26.707	26.022	26.539	274.506	721.344

Remarks

D. Acquisition Strategy

The acquisition strategy is to develop Mode 5 Engineering Change Proposals for modern Mark XII Identification Friend or Foe (IFF) equipment and integrate into all Navy Combat Weapons systems platforms and augment the Navy's Cooperative Identification Capability to include Mode 5.

E. Performance Metrics

Achieve Full Rate Production Decision and Initial Operational Capability.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604777N / *Navigation/Id System*	Project (Number/Name) 0921 / *NAVSTAR GPS Equipment*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0921: *NAVSTAR GPS Equipment*	265.201	16.774	26.965	80.044	-	80.044	79.713	105.125	41.489	23.648	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Navigation Satellite Timing & Ranging (NAVSTAR) Global Positioning System (GPS) project (0921) is a space-based Positioning, Navigation, and Timing (PNT) system that provides authorized users with secure, worldwide, all weather, three dimensional position, velocity, and precise time data. This project is comprised of four distinct efforts: Air and Sea Navigation Warfare (NAVWAR), GPS-based PNT Service (GPNTS), and GPS Modernization. Research, Development, Testing and Evaluation (RDT&E) funds are used to perform all the non- recurring GPS Surface Ship, Submarine and Aircraft Development, Integration, and Testing efforts in support of NAVSTAR GPS.

The Air and Sea NAVWAR programs were established to provide continued access to GPS information in a denied or impeded electronic environment. Development efforts for both programs provide improvements to various platform type antennas and ensure compatibility with the new Military Code (M-Code) signal. The Air NAVWAR program continues integration efforts using GPS Antenna System (GAS-1), Advanced Digital Antenna Production (ADAP), and other anti-jam antennas on air platforms while investigating smaller anti-jam antennas for space constrained platforms and aircraft with unique requirements. The Sea NAVWAR program integrates Anti-Jam (AJ) antennas onto surface and subsurface platforms. The Sea NAVWAR program will continue to research the viability and development of smaller anti-jam antennas for space-constrained platforms. The program continues to support the Submarine Anti-Jam GPS Enhancement (SAGE) antenna development which integrates AJ capability into the submarine Multi-Function Mast (OE-538B) antenna system.

The GPNTS system is being developed to serve as the primary PNT system for the Navy to ensure reliable PNT capability and interoperability insertion into GPS receivers and associated Command, Control, Computers, Communications and Intelligence (C4I), and Combat Systems in a denied environment. GPNTS provides precise PNT data required for combat, weapons, command, control, communications, navigation, and other systems, as well as providing the time synchronization critical to the network environments. GPNTS will back fit current PNT/GPS systems as well as serve as a forward fit for new platforms. GPNTS will host the GPS Directorate-developed Military GPS User Equipment (MGUE) card, allowing access to the new GPS M-Code signal. GPNTS will provide more robust and secure GPS/PNT capabilities than is currently in the Fleet. The system will provide the capability to migrate non-real time GPS data toward a Common Computing Environment (CCE), such as Consolidated Afloat Networks Enterprise Services (CANES), and provide a path for the integration of advanced navigation systems and sensors. GPNTS supports Anti-Access/Area of Denial (A2AD) by providing Assured PNT (A-PNT) capability to C4ISR and Combat Systems in standalone and networked architectures throughout maritime domains.

GPS continues to be integrated in all DoD platforms and the development of enhanced and protected GPS is a national security priority. GPS Modernization executes the Navy's integration of Military GPS User Equipment (MGUE) being developed by the Air Force GPS Directorate. This effort provides Navy platforms improved access to GPS signals in challenged and jamming environments. Because of the number and diversity of all of the Navy's air, surface, subsurface, and weapons platforms, this project will consist of multiple parallel efforts across many program offices with central coordination and management of funding and priorities by GPS Modernization. Modernized GPS receivers will utilize the new M-Code GPS Signal in Space, incorporate enhanced cryptology, deliver greater position and time accuracy, and provide

improved protection against signal spoofing as compared to legacy receivers. Additionally, GPS Modernization delivers increased GPS AJ protection and enables blue force GPS electronic attack. This effort supports Navy compliance with Public Law 111-383 which prohibits spending funds on non-M-Code GPS user equipment after FY 2017. Initial NAVSTAR GPS Modernization efforts were funded by the Air Force in FY2015 and FY2016 as a joint effort with the Air Force GPS Directorate--the Department of Defense office for developing military user equipment.

FY18 funds provide for Air NAVWAR to ramp up integration efforts and flight testing of anti-jam protection on Unmanned Aircraft Systems (UAS) platforms, for integration of anti-jam antennas into select aviation platforms in order to provide A-PNT in a GPS jamming environment, and for development and integration efforts of miniaturized NAVWAR antennas in AH-1Z, UH-1Y, MQ-4C and MQ-8B/C. Sea NAVWAR funds provide for completion of development and integration of SAGE into the submarine OE-538B antenna system mast, initial government testing of the mast, and research for the development of smaller anti-jam antennas for Size, Weight, and Power (SWaP) restricted platforms.

In FY18, GPNTS will ramp up efforts in preparation for Initial Operational Test and Evaluation (IOT&E) to include: coordination with Commander, Operational Test and Evaluation Force (COMOPTEVFOR) and the Joint Interoperability Test Command (JITC) for Combat Systems Certification, Technical Evaluation, and Navigation Certification; prepare pre-test plans, procedures and documentation; complete an Operational Test Readiness Review; and prepare the test platforms. An increase in funds provides for the development of the Pre-planned Product Improvement (P3I) technology insertion for software enhancements for Assured-Positioning, Navigation, and Timing (A-PNT) sensor suite integration and for the design, development, build, integration, and test of a single rack solution for smaller surface combatant platforms.

FY18 growth in GPS Modernization funding requirements is due to award of prime vendor GPS integration contracts and procurement of production ready unit (PRU) modernized Military Code (M-Code) capable GPS receiver test articles for the platform integration and test activities of 3 platforms: FA-18E/F, EA-18G, and E-2D, as well as the expansion of GPS Modernization efforts to include the start of government systems engineering and contracting efforts for 5 additional platforms: MV-22, CMV-22, E-6B, CH-53K, and KC-130. Each platform has a unique configuration, which requires separate parallel efforts to integrate and test the modernized GPS receiver into each platform, individual prime vendor contracts, and coordination with each PMA to include management, oversight and support of the effort.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Air Navigation Warfare (NAVWAR)	2.624	2.208	13.237	0.000	13.237
Articles:	-	-	-	-	-
Description: Air Navigation Warfare (NAVWAR) provides the Warfighter continued access to GPS through the use of anti-jam (AJ) Antenna Systems designed to counter GPS Electronic Warfare threats due to intentional and unintentional interference. Air NAVWAR efforts include investigation and testing of emerging technologies to improve anti-jam capability and technologies such as development of miniaturized very small antenna systems to allow for the capability on small variant aircraft. Efforts will also include development to ensure antennas can accept the new Military Code (M-Code) signal.					
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continued to work to mature small form factor Anti-Jam (AJ) antenna solutions for Unmanned Aerial Systems (UAS) platforms and AH-1Z/UH-1Y helicopters to counter emerging GPS Electronic Warfare threats. Conducted demonstrations of small AJ antenna variants on multiple platforms. Assisted E-2D platform with integration of AJ capable antennas in conjunction with a refueling probe upgrade. Continued to lead Aviation Assured Position, Navigation and Timing (A-PNT) efforts, to include the Analysis of Alternatives (AoA) by working with Navy Air platforms on defining navigation antenna requirements to ensure reliable A-PNT capability and associated C4I and combat systems in a GPS degraded environment. Continued to support accelerated AJ antenna efforts with H-1 helicopters including a Foreign Comparative Test (FCT) effort. Coordinated H-1/UAS vulnerability testing. Continued to assist the Fleet with GPS Enterprise Selective Availability Anti-Spoofing Module (SAASM) and Architecture Evolution Plan (AEP) developments, providing subject matter expertise to NAVAIR platforms for SAASM integration and monitor future GPS Directorate SAASM upgrades. Participated in joint NAVWAR Memorandum of Understanding (MOU) initiatives and foreign cooperative testing with Canada, United Kingdom and Australia to meet OSD initiatives.					
FY 2017 Plans: Continue to assist air platforms with integration of Anti-Jam (AJ) capable antennas, to include E-2D, AH-1Z/ UH-1Y helicopters, and Unmanned Aircraft Systems (UAS), such as MQ-8B and MQ-8C Fire Scout. Conduct integration and testing of small form factor AJ antenna solution for UAS. Complete Foreign Comparative Test for H-1 platforms to qualify Raytheon Limited Systems Landshield antenna as an alternative for integration onto H-1 helicopter platforms. Continue efforts to assist E-2D platforms with AJ antenna capabilities in conjunction with a refueling probe upgrade. Continue to lead Aviation Assured Position, Navigation and Timing (A-PNT) efforts by working with Navy Air platforms on navigation requirements and coordinating with surface Navy platforms to leverage synergies. Continue efforts to support A-PNT Capability Development Document (CDD) development, including					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
development of Navy unique Key Performance Parameters (KPP) and requirements, to ensure reliable A-PNT capability and interoperability in a GPS denied environment. Continue to assist the Fleet with GPS Enterprise Selective Availability Anti-Spoofing Module (SAASM) and Architecture Evolution Plan (AEP) developments, providing subject matter expertise to NAVAIR platforms for SAASM integration and monitor future GPS Directorate SAASM upgrades. Continue to participate in joint NAVWAR Memorandum of Understanding (MOU) initiatives with Canada, United Kingdom and Australia to meet OSD initiatives.					
FY 2018 Base Plans: The $11M increase in funding is to integrate Anti-Jam (AJ) antennas into select aviation platforms and to fund development and integration of miniaturized NAVWAR antennas in AH-1Z, UH-1Y, MQ-4C and MQ-8B/C air platforms. Efforts require ramp up of systems engineering to include integration studies; Non-Recurring Engineering for platform interface modifications; GPS antenna test articles; integration testing; test plan development and updates; test support, analysis and reporting; and increased engineering support staff. Efforts will commence to determine air platform specific requirements and determine if existing solutions are available or a new solution needs to be developed. Initiate developmental test effort for common solution for H-1 helicopter variants to include the AH-1Z and UH-1Y. Start integration of solution on platform with MIL-STD-704 Power test, MIL-STD-810 Environmental test, MIL-STD-461 Weapons Replaceable Assembly (WRA) Box-Level Electromagnetic Interference (EMI) Test, and MIL-STD-464 System-Level EMI Tests. Continue integration effort for AJ capability, initiate wiring software, and upgrade main operation software to incorporate Mixed-Mode functionality for MQ-4C and MQ-8B/C Fire Scout platforms. Design antenna solution. Conduct testing of GPS receivers with associated antennas at Facilities for Antenna and Radar Cross Section (RCS) Measurements (FARM). Continue to assist other air platforms with integration of AJ capable antennas to include Unmanned Aircraft Systems (UAS) and E-2D. Conduct testing of small form factor AJ solution. Continue Navigation Warfare (NAVWAR) demonstrations for unmanned platforms, work on miniaturized NAVWAR anti-jam antenna solutions, and assist new unmanned vehicles with navigation issues.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue efforts to assist with coordination of E-2D platforms with AJ capable antennas in conjunction with a refueling probe upgrade. Continue to lead Aviation A-PNT efforts by working with Navy Air platforms on navigation requirements and coordinating with surface Navy platforms to leverage synergies. Continue efforts to support Capabilities Development Document (CDD) development, including development of Navy unique Key Performance Parameters (KPPs) and requirements, in order to ensure reliable A-PNT capability and interoperability in a GPS denied environment. Continue to assist the Fleet with GPS Enterprise Selective Availability Anti-Spoofing Module (SAASM) and Architecture Evolution Plan (AEP) developments, providing subject matter expertise to NAVAIR platforms for SAASM integration and monitor future GPS Directorate SAASM upgrades. Continue to participate in joint NAVWAR Memorandum of Understanding (MOU) initiatives with Canada, United Kingdom and Australia to meet OSD initiatives. ***FY 2018 OCO Plans:*** N/A.					
Title: Sea Navigation Warfare (NAVWAR) ***Articles:*** ***Description:*** Sea Navigation Warfare (NAVWAR) provides the Warfighter continued access to GPS through the use of anti-jam (AJ) Antenna Systems designed to counter GPS Electronic Warfare threats due to intentional and unintentional interference on surface and subsurface platforms through the continued development of anti-jam antennas. The program is continuing the Submarine Anti-Jam GPS Enhancement (SAGE) antenna development, which integrates AJ capability into the submarine Multi-Function Mast (OE-538B). Sea NAVWAR will continue to research the viability and development of smaller AJ antennas for platforms with Size, Weight and Power (SWaP) restrictions and ensure compatibility with the Military Code (M-Code) signal. ***FY 2016 Accomplishments:*** Provided government oversight, system engineering, logistics, contracts, and programmatic management efforts for the Submarine Anti-Jam (AJ) GPS Enhancement (SAGE) and integration into the submarine Multi-Function Mast (OE-538B) antenna system development.	4.792 -	7.659 -	6.109 -	0.000 -	6.109 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Initiated process for design changes required to integrate SAGE and Military Code (M-Code) into the OE-538B antenna system production representative article (PRA). Efforts include: - Completed benchtop testing with thermal loads inside antenna. - Completed changes to the application programming interface and testing of the packet radio control software. - Completed initial radio frequency (RF) characterizations and system functionality testing of the SAGE antenna electronics boards. Continued efforts to support the Preliminary Design Review (PDR), Critical Design Review (CDR), and Test Readiness Review (TRR) for the OE-538B Production Ready Article (PRA). Completed preliminary assessment of design changes to the Radio Frequencies Distribution and Control System (RFDACS), the interface between SAGE and the OE-583B antenna system. Completed update of the Sea NAVWAR Program Life Cycle Cost Estimate (PLCCE). Initiated studies for smaller AJ antennas to meet requirements for Size, Weight, and Power (SWaP) restricted platforms. Continued to participate in joint NAVWAR Memorandum of Understanding (MOU) initiatives with Canada, United Kingdom and Australia to meet OSD initiatives, to include cooperative developmental and environmental testing with Canada, United Kingdom and Australia.					
FY 2017 Plans: Provide government oversight, system engineering, logistics, contracts, and programmatic management efforts for the Submarine Anti-Jam (AJ) GPS Enhancement (SAGE) and integration into the submarine Multi-Function Mast (OE-538B) antenna system development. Complete the Preliminary Design Review (PDR), Critical Design Review (CDR), and finalize design and integration of SAGE production representative article (PRA) into the OE-538B antenna system. Commence efforts in preparation for the OE-538B Mast Functional Configuration Audit (FCA). Commence development process and actions for Radio Frequencies Distribution and Control System (RFDACS) design changes required to implement the interface of GPS AJ into the OE-538B antenna assembly.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Commence Engineering Change (EC) process for implementation of the OE-538B antenna system on all submarine classes. Commence efforts in preparation for delivery, developmental testing, and first article qualification testing (FAQT) of the OE-538B antenna system PRA. Complete update of Sea NAVWAR Cost Analysis Requirements Description (CARD). Continue studies and begin analysis on smaller Anti-Jam antennas to meet requirements for Size, Weight, and Power (SWaP) restricted platforms. Continue to participate in joint NAVWAR Memorandum of Understanding (MOU) initiatives with Canada, United Kingdom and Australia to meet OSD initiatives.					
FY 2018 Base Plans: Continue to provide government oversight, system engineering, logistics, contracts, and programmatic management efforts for the Submarine Anti-Jam GPS Enhancement (SAGE) and integration into the submarine Multi-Function Mast (OE-538B) antenna system development. Complete Test Readiness Review (TRR) and commence OE-538B PRA factory acceptance testing. Complete OE-538B production representative article (PRA) factory acceptance testing and conduct Functional Configuration Audit (FCA). Complete Radio Frequencies Distribution and Control System (RFDACS) development and integration with OE-538B antenna system production representative article (PRA). Accept delivery of OE-538B PRA and conduct Government Acceptance Test. Conduct OE-538B PRA laboratory developmental testing with RFDACS. Commence the following First Article Qualification Testing of SAGE and OE-538B antenna system: - Radio Frequency (RF) Characterization - Structure Borne Noise (SBN) - Electromagnetic Interference (EMI)					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Vibration - Electromagnetic Pulse (EMP)/High Altitude Electromagnetic Pulse (HEMP) - Thermal - Electromagnetic Environmental Effects (E3) Commence efforts for the OE-538B Physical Configuration Audit and development of OE-538B Technical Manual, I-Level Factory Training, and Factory Maintenance Demonstration. Commence preparation for Underwater Explosion (UNDEX) testing of SAGE and OE-583B antenna system. Complete Engineering Change (EC) process for implementation of the OE-538B antenna system on all submarine classes. Commence preparation for OE-538B Developmental Testing/Operational Testing (DT/OT) on operational submarine classes. Continue studies and begin analysis on smaller Anti-Jam antennas to meet requirements for Size, Weight, and Power (SWaP) restricted platforms. Continue to participate in joint NAVWAR Memorandum of Understanding (MOU) initiatives with Canada, United Kingdom and Australia to meet OSD initiatives. ***FY 2018 OCO Plans:*** N/A.					
Title: Global Positioning System (GPS) - Based Positioning, Navigation and Timing (PNT) Service (GPNTS) ***Articles:***	9.358 -	6.007 -	17.689 -	0.000 -	17.689 -
Description: GPNTS is the Navy's next generation Positioning, Navigation, and Timing (PNT) system. GPNTS will provide more robust and secure GPS/PNT capabilities than is currently in the Fleet. GPNTS will replace Navigation Sensor System Interface (NAVSSI) and WRN-6 systems on surface ships. The system contains Selective Availability Anti-spoofing Security Module (SAASM) GPS security architecture with a planned migration to GPS Military Code (M-Code). ***FY 2016 Accomplishments:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conducted Final Acceptance of GPNTS Engineering Development Models (EDM) 1 and 2 and received EDM 2 at government laboratory facilities. Continued preparation efforts in support of Government Developmental Testing (DT) and Operational Assessment (OA) to include: - Trained staff, prepared laboratory, developed test plans - Prepared EDMs for transport and delivery to OA test facility, Wallops Island, Virginia Continued development of installation documentation including updating Installation Requirements Drawings (IRD), Testing configurations, Ship Change Documents (SCDs), Ship Installation Drawings (SIDs), Enterprise Change Requests (ECRs), and Engineering Change Orders (ECOs). Commenced Functional and Performance Independent Verification and Validation (IV&V) testing and Positioning, Navigation, and Timing (PNT) Performance testing efforts on GPNTS EDMs. Continued efforts to coordinate OA testing with Commander, Operational Test and Evaluation Force (COMOPTEVFOR) and Mission Readiness Assessment testing. Initiated efforts for Environmental Qualification Testing (EQT) and Aegis integration. Provided support efforts to obtain required Cybersecurity documentation in order to conduct Cybersecurity testing and evaluation events. Continued the development and update of statutory and regulatory acquisition documentation in support of a Milestone C decision including: Test and Evaluation Master Plan (TEMP), Capability Production Document (CPD), Clinger Cohen Act (CCA) documentation, and the GPNTS Acquisition Strategy (AS). Initiated the Independent Logistics Assessment (ILA) documentation in support of a Milestone C decision					
FY 2017 Plans: Complete Functional and Performance Independent Verification and Validation (IV&V) Testing on the GPNTS Engineering Development Models (EDMs). Conduct GPNTS Operational Assessment (OA) at Wallops Island, Virginia Test Facility. Resolve software defects discovered during OA.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Commence formal Environmental Qualification Testing (EQT) on the GPNTS EDM. Commence preparations to support Initial Operational Test and Evaluation (IOT&E) activities which include Navigation Certification, Technical Evaluation, and Combat Systems Certification test plans, test procedures, and coordination with Naval Testing Agencies, Commander, Operational Test and Evaluation Force (COMOPTEVFOR) and the Joint Interoperability Test Command (JITC). Complete development of GPNTS installation documentation based on finalized configurations, such as Installation Requirements Drawings (IRD), Ship Change Documents (SCD), Engineering Change Orders (ECOs) and Enterprise Change Requests (ECR) in support of IOT&E activities. Complete all statutory and regulatory acquisition documentation including the GPNTS Test and Evaluation Master Plan (TEMP), Capability Production Document (CPD), Clinger Cohen Act (CCA), and the GPNTS Acquisition Strategy (AS) in support of a Milestone C decision. Complete the Independent Logistics Assessment (ILA) in support of a Milestone C decision. Begin studies to insert software upgrades and GPNTS Pre-planned Product Improvement (P3I) efforts for Assured-Positioning, Navigation, and Timing (A-PNT) sensor suite integration to include, but not limited to: All Source Position Navigation (ASPN) algorithm, Celestial Navigation, Two Way Satellite Time Transfer (TWSTT), Public Key Infrastructure (PKI), Host-Based Security System (HBSS). Receive a successful Milestone C decision from the Milestone Decision Authority (MDA) for approval to enter into the GPNTS Low Rate Initial Production (LRIP) and IOT&E phase of the Program's Lifecycle.					
FY 2018 Base Plans: The $8M increase in funding is for: 1) ramp up of efforts in preparation for Initial Operational Test and Evaluation (IOT&E), 2) development of the Pre-planned Product Improvement (P3I) technology, 3) development of a single rack solution for smaller surface combatant platforms, and 4) development of a GPNTS configuration to meet unique requirements for Littoral Combat Ship (LCS) platforms. Begin development of GPNTS P3I technology insertion for software enhancements for Assured-Positioning, Navigation, and Timing (A-PNT) sensor suite integration to include, but not limited to: All Source Position Navigation (ASPN) algorithm, Celestial Navigation, Two Way Satellite Time Transfer (TWSTT), Public Key Infrastructure (PKI), Host-Based Security System (HBSS). ASPN, Celestial Navigation, and TWSTT are					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
developments to address emerging threats to the GPS signal in a GPS-denied environment. PKI and HBSS provide secure cybersecurity architecture to the GPNTS system to comply with OPNAV Cybersecurity mandates. Commence the design, build, integration, and test of a GPNTS Configuration A one rack solution for smaller surface combatant platforms to include Dock Landing Ship (LSD), United States Coast Guard (USCG), patrol crafts (PC), Mine Countermeasure (MCM), and Military Sealift Command (MSC) platforms. Commence the requirements analysis and initiate the design and development of GPNTS configuration modification for the LCS even and odd platforms configurations to replace the currently installed commercial navigation systems. Begin development, assembly, and implementation of Navigation Simulator (NAVSIM) and Advanced GPS Navigation Simulator (AGNS) tool required for testing and integration of the GPNTS system with all Combat Systems interfaces to support IOT&E. Continue to resolve GPNTS software defects discovered during Operational Assessment (OA) prior to formal IOT&E activities. Continue preparations and coordination of efforts with Commander, Operational Test and Evaluation Force (COMOPTEVFOR) and the Joint Interoperability Test Command (JITC) to support GPNTS Navigation Certification, Technical Evaluation, Combat Systems Certification and IOT&E activities onboard the test platforms. Continue to develop the GPNTS software in support of formal IOT&E activities. Continue development of IOT&E documentation to include test plan, test procedures, and System Operational Verification Test (SOVT) documentation. Conduct GPNTS Aegis Integration Event (AIE) activities at Wallops Island, VA, to ensure compatibility with specific Aegis Combat System baselines. The AIE is required prior to the installation of GPNTS on the Aegis capable DDG IOT&E platform and prior to fielding on platforms with Aegis capability (DDGs and CGs). ***FY 2018 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: Global Positioning System (GPS) Modernization	0.000	11.091	43.009	0.000	43.009
Articles:	-	-	-	-	-

Description: GPS Modernization funds the Navy's integration of Military GPS User Equipment (MGUE), being developed by the Air Force GPS Directorate into various receivers on Navy air and sea platforms. This project is responsible for the Navy's single voice on providing service requirements to Air Force receiver development programs and coordinate Navy reviews of Air Force GPS receiver documentation. Tasking includes overall centralized planning, coordination and budgeting of the non-recurring engineering required to conduct systems engineering, integration, and testing for multiple individual platform. This effort includes use of core expertise and platform program office government engineers to conduct systems engineering, review and oversight of prime vendor engineering documents, and develop government test plans. The integration timeline is 5+ years from planning to test and is dependent on platform type. Receivers will be procured through existing JSSMO contracts and integrated on Navy platforms using Prime vendor contracts held by each platform's program office. The MGUE card will be integrated into the receiver and tested by the prime vendor for each platform type. Testing will be accomplished by leveraging test events existing in the platform's Program of Record (POR) upgrade cycle.

Integration of MGUE provides access to the GPS M-Code to address emerging threats to use of GPS. This effort supports Navy's compliance with Public Law 111-383 which requires that all GPS user equipment be capable of receiving the new GPS M-Code signal after FY 2017.

FY 2016 Accomplishments:
N/A.

FY 2017 Plans:
Initiate efforts to integrate three (3) modernized M-Code capable GPS receivers into three (3) identified Air platforms: FA-18E/F, EA-18G and E-2D. These efforts require separate teams to work with two (2) GPS receiver vendors, two (2) Program Management Air (PMA) organizations, and two (2) aircraft Prime Vendors contracted to integrate and test the modernized GPS receiver for each platform.

Each platform uses a specific GPS receiver which requires individual parallel efforts to integrate MGUE into each specific receiver. Each receiver integration effort requires a separate team for the integration of MGUE into the identified GPS receivers to address the unique requirements. Additionally, each platform has a unique configuration, which requires separate parallel efforts to integrate and test the modernized GPS receiver into

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
each platform, to include coordination with each Program Management Air (PMA) organization; management, oversight and support of the effort; and contracting and working with the identified Prime Vendor for the platform. Conduct government systems engineering efforts. Award task orders to airframe prime vendors to initiate hardware and software M-Code integration risk reduction studies and analysis. Procure initial test articles for initial studies, analysis and test efforts. FA-18E/F: - Initiate development of requirements and systems engineering efforts for integrating M-Code capable GPS receivers into the FA-18E/F airframe and aircraft software. - Develop and implement process to integrate M-Code capability into platform receiver and integrate and test modernized receiver into platform. - Procure test article receivers from US Air Force Joint Service Support Management Office (JSSMO) Miniaturized Airborne GPS Receiver 2000 (MAGR2K) M-Code (MAGR2K-M) and Embedded GPS/Inertial Navigation System (INS) M-Code (EGI-M) programs to provide production representative M-Code capable receivers as government furnished equipment (GFE) to FA-18E/F Program Office for laboratory and flight testing. - Initiate hardware and software M-Code integration risk reduction studies and analysis via Program Management Air (PMA) 265 FA-18E/F prime vendor (Boeing) contract. - Initiate contracting efforts to support M-Code receiver integration and test with PMA 265 FA-18E/F prime vendor (Boeing). - Provide overarching management, central coordination, government oversight and guidance, shared expertise, and engineering support to ensure Naval platform performance and integration requirements are supported during M-Code receiver development. EA-18G: - Initiate development of requirements and systems engineering efforts for integrating M-Code capable GPS receivers into the EA-18G airframe and aircraft software. - Develop and implement process to integrate M-Code capability into platform receiver and integrate and test modernized receiver into platform. - Procure test article receivers from US Air Force JSSMO MAGR2K-M and EGI-M programs to provide production representative M-Code capable receivers as government furnished equipment (GFE) to EA-18G Program Office for laboratory and flight testing.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Initiate hardware and software M-Code integration risk reduction studies and analysis via PMA 265 EA-18G prime vendor (Boeing) contract. - Initiate contracting efforts to support M-Code receiver integration and test with PMA 265 EA-18G prime vendor (Boeing). - Provide overarching management, central coordination, government oversight and guidance, shared expertise, and engineering support to ensure Naval platform performance and integration requirements are supported during M-Code receiver development. E-2D: - Initiate development of requirements and systems engineering efforts for integrating M-Code capable GPS receivers into the E-2D airframe and aircraft software. - Develop and implement process to integrate M-Code capability into platform receiver and integrate and test modernized receiver into platform. - Procure test article receivers from US Air Force JSSMO EGI-M program to provide production representative M-Code capable receivers as government furnished equipment (GFE) to E-2D Program Office for laboratory and flight testing. - Initiate hardware and software M-Code integration risk reduction studies and analysis via PMA 321 E-2D prime vendor (Northrup Grumman) contract. - Initiate contracting efforts to support M-Code receiver integration and test with PMA 231 E-2D prime vendor (Northrup Grumman). - Provide overarching management, central coordination, government oversight and guidance, shared expertise, and engineering support to ensure Naval platform performance and integration requirements are supported during M-Code receiver development.					
FY 2018 Base Plans: The increase in funding is to begin integration of modernized Military Code (M-Code) capable GPS receivers and start government systems engineering and contracting efforts for five (5) additional platforms: MV-22B, CMV-22B, E-6B, CH-53K and KC-130J as well as continue modernization efforts for three (3) air platforms : FA-18E/F, EA-18G and E-2D to award Prime Vendor GPS contracts for platform integration and test efforts, and procure production ready unit (PRU) modernized GPS receiver test articles for the platform integration and test activities. These efforts require separate teams to work with the GPS receiver vendors, Program Management Air (PMA) organizations, and aircraft Prime Vendors contracts to integrate and test the modernized GPS receiver for each platform.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Each platform uses a specific GPS receiver which requires individual parallel efforts to integrate Military GPS User Equipment (MGUE) into each specific receiver. Each receiver integration effort requires a separate team for the integration of MGUE into the identified GPS receivers to address the unique requirements. Additionally, each platform has a unique configuration, which requires separate parallel efforts to integrate and test the modernized GPS receiver into each platform, to include coordination with each PMA; management, oversight and support of the effort; and contracting and working with the identified Prime Vendor for the platform. Two of the newly identified platforms (CH-53K and KC130-J) have the added unique requirement to integrate the M-Code capability into the aircraft's Embedded GPS/Inertial Navigation System (INS) (EGI). EGI is a navigation system which combines a GPS receiver card with an INS in an integrated single unit. Begin GPS Modernization efforts on the following five (5) platforms: MV-22B: - Develop and implement process to integrate and test M-Code capable receiver into platform. - Conduct initial requirements development and systems engineering efforts for integrating M-Code GPS receivers into the MV-22B airframe and aircraft software. - Procure test article receivers from US Air Force JSSMO MAGR2K-M program to provide production representative M-Code receivers as government furnished equipment (GFE) to MV-22B Program Office for laboratory and flight testing. - Award Task Order (contract held by PMA 275) and commence efforts for integration of M-Code into test receivers and follow-on test efforts for MV-22B aircraft. - Provide overarching management, central coordination, government oversight and guidance, shared expertise, and engineering support to ensure Naval platform performance and integration requirements are supported during integration of M-Code capable receiver into the platform. CMV-22B: - Develop and implement process to integrate and test M-Code capable receiver into platform. - Conduct initial requirements development and systems engineering efforts for integrating M-Code GPS receivers into the CMV-22B airframe and aircraft software in conjunction with MV-22B efforts. - Procure test article receivers from US Air Force JSSMO MAGR2K-M program to provide production representative M-Code receivers as government furnished equipment (GFE) to MV-22B Program Office for laboratory and flight testing. - Award Task Order (contract held by PMA 275) for integration of M-Code into test receivers and follow-on test efforts for CMV-22B aircraft in as part of MV-22B contract.					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Provide overarching management, central coordination, government oversight and guidance, shared expertise, and engineering support to ensure Naval platform performance and integration requirements are supported during integration of M-Code capable receiver into the platform. E-6B: - Develop and implement process to integrate and test M-Code capable receiver into platform. - Conduct initial requirements development and systems engineering efforts for integrating M-Code GPS receivers into the E-6B airframe and aircraft software. - Procure test article receivers from US Air Force JSSMO MAGR2K-M program to provide production representative M-Code receivers as government furnished equipment (GFE) to E-6B Program Office for laboratory and flight testing. - Award Task Order (contract held by PMA 271) and commence efforts for integration of M-Code into test receivers and follow-on test efforts for E-6B aircraft. - Provide overarching management, central coordination, government oversight and guidance, shared expertise, and engineering support to ensure Naval platform performance and integration requirements are supported during integration of M-Code capable receiver into the platform. CH-53K - Develop and implement process to integrate and test M-Code capable receiver into platform. - Conduct initial requirements development and systems engineering efforts for integrating M-Code GPS receivers into the CH-53K airframe and aircraft software. - Begin efforts for integration of specific M-Code capable Embedded GPS/INS (EGI) receivers into the CH-53K aircraft. - Provide overarching management, central coordination, government oversight and guidance, shared expertise, and engineering support to ensure Naval platform performance and integration requirements are supported during integration of M-Code capable receiver into the platform. KC-130J: - Develop and implement process to integrate and test M-Code capable receiver into platform. - Conduct initial requirements development and systems engineering efforts for integrating M-Code GPS receivers into the KC-130J airframe and aircraft software, to include working with US Air Force JSSMO to customize the modernized receiver to meet the added unique EGI-M requirement. - Begin efforts for integration of specific M-Code capable EGI receivers into the KC-130J aircraft.					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Provide overarching management, central coordination, government oversight and guidance, shared expertise, and engineering support to ensure Naval platform performance and integration requirements are supported during integration of M-Code capable receiver into the platform. Ramp up efforts to integrate and test modernized M-Code capable GPS receivers and continue government systems engineering efforts for three (3) air platforms: FA-18E/F, EA-18G and E-2D aircraft, each requiring specific receivers and unique integration requirements due to various platform requirements configurations: Continue GPS Modernization efforts on the following three (3) platforms: FA-18E/F: - Finalize requirements and continue systems engineering efforts for integrating M-Code GPS receivers into the FA-18E/F airframe and aircraft software. - Procure test article receivers from US Air Force JSSMO EGI-M program to provide production representative M-Code receivers as government furnished equipment (GFE) to FA-18E/F Program Office for laboratory and flight testing. - Complete hardware and software M-Code integration risk reduction studies. - Award Task Order (contract held by PMA 265) and commence efforts for integration of M-Code into receiver and follow-on test efforts for FA-18E/F aircraft. - Provide overarching management, central coordination, government oversight and guidance, shared expertise, and engineering support to ensure Naval platform performance and integration requirements are supported during M-Code receiver development and integration into the platform. EA-18G: - Finalize requirements and continue systems engineering efforts for integrating M-Code GPS receivers into the EA-18G airframe and aircraft software. - Procure test article receivers from US Air Force JSSMO EGI-M program to provide production representative M-Code receivers as government furnished equipment (GFE) to EA-18G Program Office for laboratory and flight testing. - Complete hardware and software M-Code integration risk reduction studies. - Award Task Order (contract held by PMA 265) and commence efforts for integration of M-Code into receiver and follow-on test efforts for EA-18G aircraft.					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Provide overarching management, central coordination, government oversight and guidance, shared expertise, and engineering support to ensure Naval platform performance and integration requirements are supported during M-Code receiver development and integration into the platform. E-2D: - Finalize requirements and continue systems engineering efforts for integrating M-Code GPS receivers into the E-2D airframe and aircraft software. - Complete hardware and software M-Code integration risk reduction studies. - Award contract (held by PMA 231) and commence efforts for integration of M-Code into receiver and follow-on test efforts for E-2D aircraft. - Provide overarching management, central coordination, government oversight and guidance, shared expertise, and engineering support to ensure Naval platform performance and integration requirements are supported during M-Code receiver development and integration into the platform. ***FY 2018 OCO Plans:*** N/A.					
Accomplishments/Planned Programs Subtotals	16.774	26.965	80.044	0.000	80.044

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2657: *NAVSTAR GPS Receivers (Space)*	11.129	12.752	15.923	-	15.923	17.686	17.918	18.288	18.651	Continuing	Continuing
• APN/0577: *Common Avionics Changes*	6.699	7.091	7.439	-	7.439	7.529	10.305	35.404	36.077	Continuing	Continuing
• APN/0544: *E-2 Series*	0.000	0.000	0.000	-	0.000	1.300	3.800	10.400	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

Both the Navigation Warfare (NAVWAR) Air and Sea programs will continue to integrate improved anti-jam (AJ) capability onto air and sea platforms and ensure compatibility with new Military Code (M-Code) signal.

GPS-based Positioning, Navigation, and Timing (PNT) Service (GPNTS) program will develop, acquire, and field the GPNTS, a scalable Selective Availability/Anti-Spoofing Module (SAASM) GPS-based service-oriented architecture PNT system that will provide an open, extensible, modernized replacement for the current fleet

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PNT systems, GPNTS will also integrate Military GPS User Equipment (MGUE). A firm fixed price contract is planned for an FY 2017 award to procure LRIP and FRP systems.

GPS Modernization will manage the non-recurring engineering required to conduct systems engineering, integration and test of Air Force GPS Directorate developed MGUE receivers. Existing platform hardware contracts and support infrastructure will be utilized to complete integration efforts by Air platform.

E. Performance Metrics

The primary metric used for the Air Navigation Warfare (NAVWAR) Program is acceptable system performance in a Global Positioning System (GPS) denied environment which is defined by classified values of jamming to signal ratio (J/S) identified in the Enhanced GPS User Equipment (UE) Operational Requirements Document (ORD) 562-06-00 of 7 June 2000. The performance goal is met if acceptable system performance is achieved in the threshold J/S environment cited in the classified appendix.

The primary metric used for the Sea NAVWAR is acceptable system performance in a GPS denial environment defined by classified values of jamming to J/S identified in the Sea NAVWAR Increment 2 Capabilities Production Document (CPD) (12/08). The performance goal is met if acceptable system performance is achieved in the threshold J/S environment cited in the CPD.

The primary metric used for the GPS-based Positioning, Navigation and Timing (PNT) Service (GPNTS) is successful completion of the system development as outlined in the GPNTS Technical Requirements Document (TRD).

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Air NAVWAR Development Support	WR	NAWC : Pax River	0.000	0.381	Dec 2015	0.266	Dec 2016	2.215	Nov 2017	-		2.215	Continuing	Continuing	Continuing
Air NAVWAR Govt Eng Support	WR	NAWC : Pax River	0.000	0.221	Dec 2015	0.406	Dec 2016	2.566	Dec 2017	-		2.566	Continuing	Continuing	Continuing
Sea NAVWAR Development	C/CPIF	Lockheed : Marion, MA	1.860	3.071	Dec 2015	4.690	Dec 2016	2.330	Oct 2017	-		2.330	Continuing	Continuing	Continuing
Sea NAVWAR Development Support	WR	SSC PAC, NUWC : San Diego, Newport	0.000	0.696	Dec 2015	0.924	Dec 2016	1.484	Dec 2017	-		1.484	Continuing	Continuing	Continuing
Sea NAVWAR Govt Eng Support	WR	SSC PAC, NUWC : San Diego, Newport	0.000	0.404	Dec 2015	1.401	Dec 2016	0.345	Dec 2017	-		0.345	Continuing	Continuing	Continuing
GPNTS HW Development	C/CPIF	Raytheon : San Diego	33.534	2.930	Jan 2016	2.734	Nov 2016	0.000		-		0.000	0.000	39.198	-
GPNTS SW Development	TBD	TBD : TBD	0.000	0.000		0.000		5.000	Jan 2018	-		5.000	Continuing	Continuing	Continuing
GPNTS Development Support	WR	SSC PAC : San Diego	0.000	1.360	Dec 2015	0.725	Dec 2016	2.658	Dec 2017	-		2.658	Continuing	Continuing	Continuing
GPNTS Govt Eng Support	WR	SSC PAC : San Diego	0.000	0.788	Dec 2015	1.105	Dec 2016	4.750	Dec 2017	-		4.750	Continuing	Continuing	Continuing
GPS Mod Development	TBD	TBD : TBD	0.000	0.000		2.150	May 2017	11.300	Jan 2018	-		11.300	Continuing	Continuing	Continuing
GPS Mod Hardware	TBD	TBD : TBD	0.000	0.000		1.900	May 2017	9.679	Dec 2017	-		9.679	Continuing	Continuing	Continuing
GPS Mod Development Support	WR	SSC PAC, NAWC : San Diego, Pax River	0.000	0.000		1.338	Jan 2017	10.308	Nov 2017	-		10.308	Continuing	Continuing	Continuing
GPS Mod Govt Eng Support	WR	SSC PAC, NAWC : San Diego, Pax River	0.000	0.000		2.040	Jan 2017	5.642	Nov 2017	-		5.642	Continuing	Continuing	Continuing
Product Development	WR	GPS Directorate : Los Angeles	3.740	0.684	Dec 2015	0.500	Dec 2016	1.300	Dec 2017	-		1.300	Continuing	Continuing	Continuing
Systems Engineering	WR	Govt, Contractor : San Diego, Newport	21.942	0.304	Nov 2015	0.150	Nov 2016	0.700	Nov 2017	-		0.700	Continuing	Continuing	Continuing
Product Development	TBD	Various : Various	89.596	0.000		0.000		0.000		-		0.000	0.000	89.596	-
		Subtotal	150.672	10.839		20.329		60.277		-		60.277	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

FY18 increases: Air NAVWAR for Non-Recurring Engineering for platform interface modifications and GPS antenna test article integration efforts; GPNTS for pre-planned product improvement (P3I) software development and single rack solution for smaller platforms; GPS Modernization for MGUE M-Code risk reduction and integration, platform test articles and test efforts across eight (8) platforms.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Engineering Services	WR	BAH : San Diego, Pax River, China Lake	0.000	1.899	Nov 2015	0.932	Nov 2016	1.830	Nov 2017	-		1.830	Continuing	Continuing	Continuing
Integrated Logistics Support	WR	SSC PAC, NAWC : San Diego, Pax River	0.000	0.210	Dec 2015	0.677	Dec 2016	1.735	Dec 2017	-		1.735	Continuing	Continuing	Continuing
Training Development	WR	SSC PAC, NAWC : San Diego, Pax River	0.000	0.054	Dec 2015	0.000		0.000		-		0.000	0.000	0.054	-
Technical Data	WR	Various : Various	0.000	0.401	Dec 2015	0.000		0.000		-		0.000	0.000	0.401	-
Support	Various	Various : Various	52.830	0.000		0.000		0.000		-		0.000	0.000	52.830	-
		Subtotal	52.830	2.564		1.609		3.565		-		3.565	-	-	-

Remarks

FY18 increase for ramp up of systems engineering efforts and integration studies for Air NAVWAR and GPS Modernization.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Air NAVWAR Test & Evaluation	WR	NAWC : Pax River	0.000	0.404	Nov 2015	0.391	Nov 2016	2.250	Nov 2017	-		2.250	Continuing	Continuing	Continuing
Sea NAVWAR Test & Evaluation	WR	SSC PAC, NUWC : San Diego, Newport	0.000	0.555	Nov 2015	0.662	Nov 2016	0.338	Nov 2017	-		0.338	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GPNTS Test & Evaluation	WR	SSC PAC : San Diego	0.000	0.987	Nov 2015	0.820	Nov 2016	3.187	Nov 2017	-		3.187	Continuing	Continuing	Continuing
GPS Mod Test & Evaluation	WR	SSC PAC, NAWC : San Diego, Pax River	0.000	0.000		0.459	Nov 2016	1.875	Nov 2017	-		1.875	Continuing	Continuing	Continuing
Test & Evaluation	Various	Various : Various	45.296	0.000		0.000		0.000		-		0.000	0.000	45.296	-
		Subtotal	45.296	1.946		2.332		7.650		-		7.650	-	-	-

Remarks

FY18 increases: Air NAVWAR for analysis, integration and test efforts for miniaturized anti-jam solution; GPNTS for OT&E and certification efforts in preparation for formal IOT&E; GPS Modernization for integration and test activities across five (5) new and three (3) current platforms.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPAF	BAH : San Diego, Pax River, China Lake	6.069	1.425	Nov 2015	2.695	Nov 2016	8.552	Nov 2017	-		8.552	Continuing	Continuing	Continuing
Management Services	Various	Various : Various	10.334	0.000		0.000		0.000		-		0.000	0.000	10.334	-
		Subtotal	16.403	1.425		2.695		8.552		-		8.552	-	-	-

Remarks

FY18 increase to support overall growth in efforts and requirements across division.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	265.201	16.774		26.965		80.044		-		80.044	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

Air Navigation Program Schedule

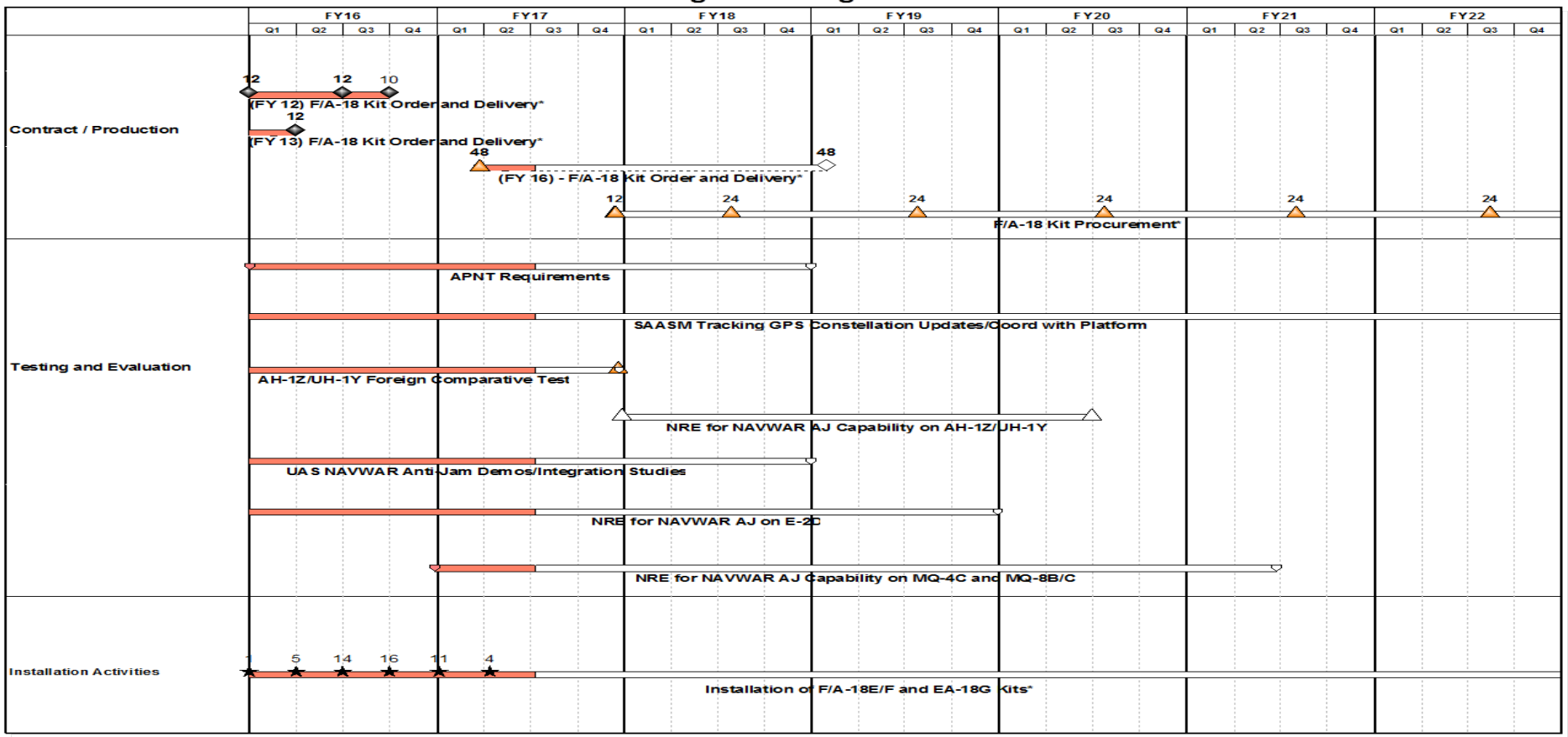

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

Sea NAVWAR

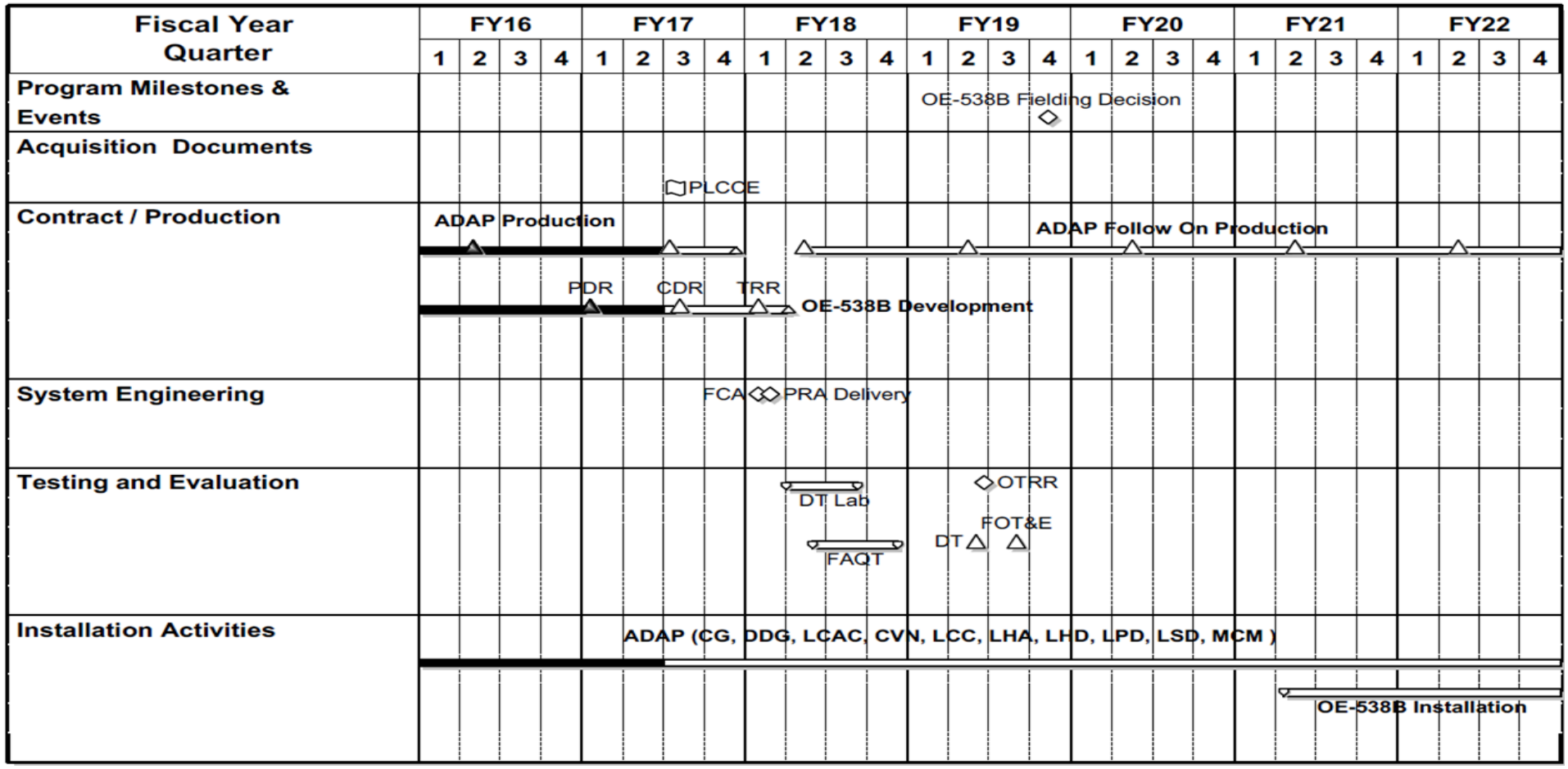

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

GPS Modernization

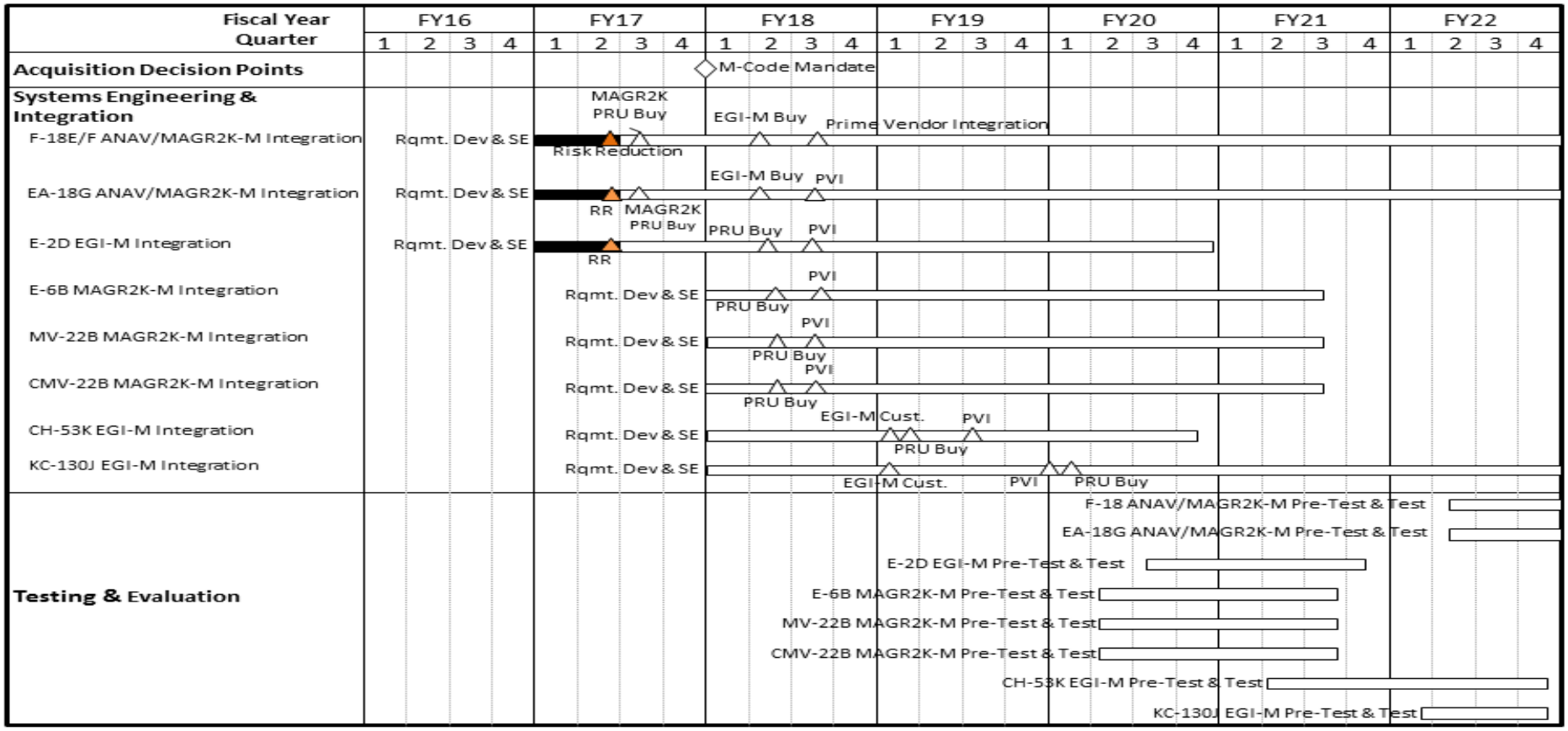

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

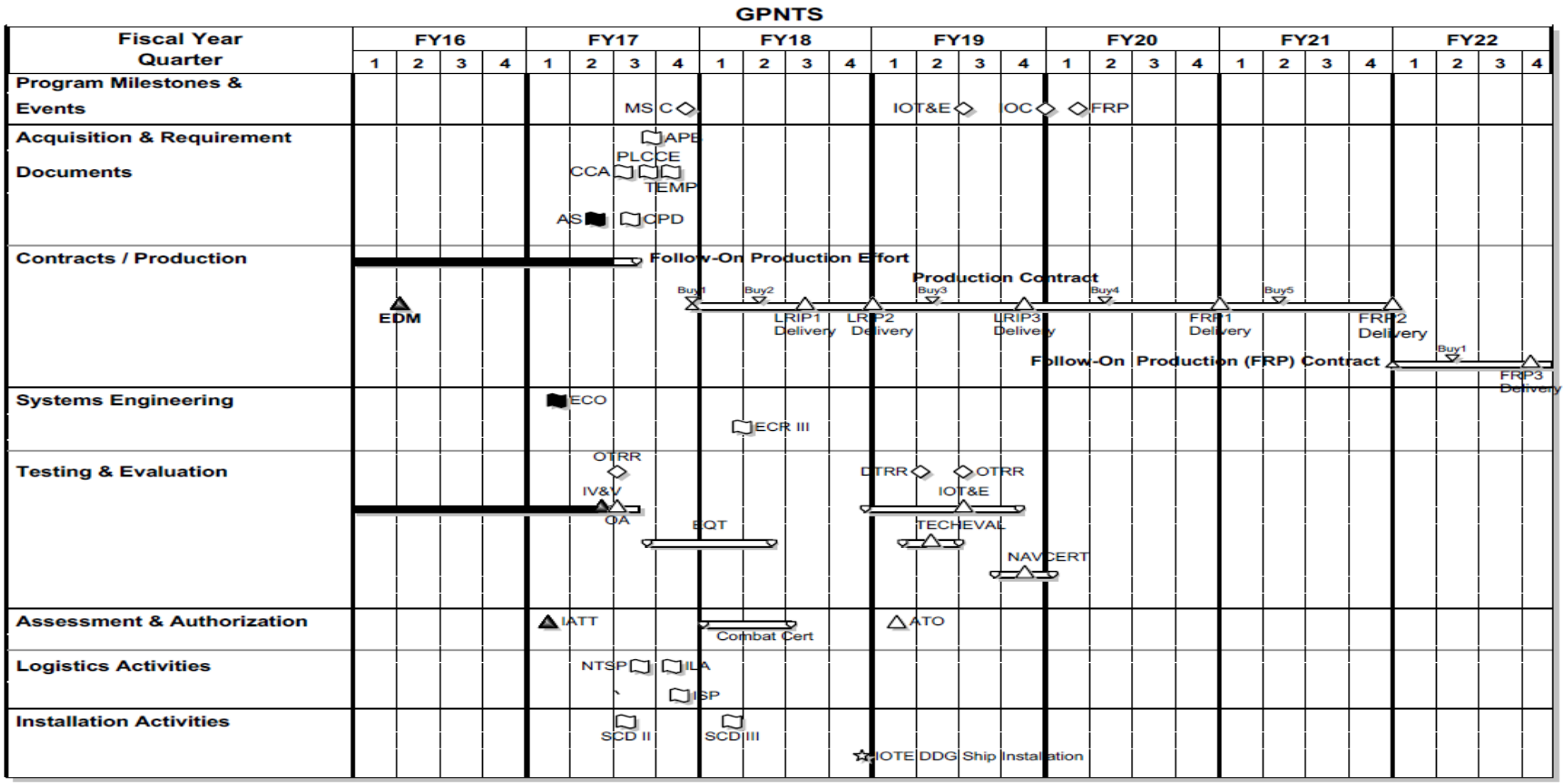

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0921				
Air NAVWAR: Air Navigation F/A-18 Kit Procurement 2016 Funds	1	2017	1	2017
Air NAVWAR: Air Navigation F/A-18 Kit Procurement 2017	4	2017	4	2017
Air NAVWAR: Air Navigation F/A-18 Kit Procurement 2018	3	2018	3	2018
Air NAVWAR: Air Navigation F/A-18 Kit Procurement 2019	3	2019	3	2019
Air NAVWAR: Air Navigation F/A-18 Kit Procurement 2020	3	2020	3	2020
Air NAVWAR: Air Navigation F/A-18 Kit Procurement 2021	3	2021	3	2021
Air NAVWAR: Air Navigation F/A-18 Kit Procurement 2022	3	2022	3	2022
Air NAVWAR: Air Navigation APNT Requirements & AIR Analysis of Alternatives (AOA)	1	2016	4	2018
Air NAVWAR: Air Navigation SAASM Tracking GPS Constellation Updates	1	2016	4	2022
Air NAVWAR: Air Navigation AH-1Z/UH-1Y Foreign Comparative Test	1	2016	4	2017
Air NAVWAR: Air Navigation NRE Integration for NAVWAR AJ on AH-1 Z/UH-1Y	1	2018	2	2020
Air NAVWAR: Air Navigation UAS NAVWAR Anti-Jam Demos/Integration Studies	1	2016	4	2018
Air NAVWAR: Air Navigation E-2D Ant-Jam Platform Coordination	1	2016	4	2019
Air NAVWAR: Air Navigation Integration for NAVWAR AJ Capability on MQ-4C & MQ-8B/8C	1	2017	2	2021
Air NAVWAR: Air Navigation Installation of F/A-18 & EA-18 Kits	1	2016	4	2022
Sea NAVWAR: Sea Navigation OE-538B Fielding Decision	4	2019	4	2019
Sea NAVWAR: Sea Navigation Project Life Cycle Cost Estimate (PLCCE)	3	2016	3	2016
Sea NAVWAR: Sea Navigation ADAP Production FY16	2	2016	2	2016
Sea NAVWAR: Sea Navigation ADAP Production FY17	3	2017	3	2017
Sea NAVWAR: Sea Navigation ADAP Follow On Production FY18	2	2018	2	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Sea NAVWAR: Sea Navigation ADAP Follow On Production FY19	2	2019	2	2019
Sea NAVWAR: Sea Navigation ADAP Follow On Production FY20	2	2020	2	2020
Sea NAVWAR: Sea Navigation ADAP Follow On Production FY21	2	2021	2	2021
Sea NAVWAR: Sea Navigation ADAP Follow On Production FY22	2	2022	2	2022
Sea NAVWAR: Sea Navigation OE-538B Development	1	2016	2	2018
Sea NAVWAR: Sea Navigation PDR	1	2017	1	2017
Sea NAVWAR: Sea Navigation CDR	3	2017	3	2017
Sea NAVWAR: Sea Navigation TRR	1	2018	1	2018
Sea NAVWAR: Sea Navigation FCA	1	2018	1	2018
Sea NAVWAR: Sea Navigation PRA Delivery	1	2018	1	2018
Sea NAVWAR: Sea Navigation DT LAB	2	2018	3	2018
Sea NAVWAR: Sea Navigation OTRR	2	2019	2	2019
Sea NAVWAR: Sea Navigation FAQT	2	2018	4	2018
Sea NAVWAR: Sea Navigation DT	2	2019	2	2019
Sea NAVWAR: Sea Navigation FOT&E	3	2019	3	2019
Sea NAVWAR: Sea Navigation ADAP Installations	1	2016	4	2022
Sea NAVWAR: Sea Navigation OE-538B Installations	2	2021	4	2022
GPS-based PNT Service (GPNTS): GPNTS Milestone C	4	2017	4	2017
GPS-based PNT Service (GPNTS): GPNTS IOT&E	3	2019	3	2019
GPS-based PNT Service (GPNTS): GPNTS Initial Operational Capability (IOC)	1	2020	1	2020
GPS-based PNT Service (GPNTS): GPNTS Full Rate Production (FRP)	1	2020	1	2020
GPS-based PNT Service (GPNTS): GPNTS Acquistion Program Baseline (APB)	3	2017	3	2017
GPS-based PNT Service (GPNTS): GPNTS PLCCE	3	2017	3	2017
GPS-based PNT Service (GPNTS): GPNTS Test and Evaluation Master Plan (TEMP)	4	2017	4	2017
GPS-based PNT Service (GPNTS): GPNTS Clinger Cohen Act (CCA)	3	2017	3	2017
GPS-based PNT Service (GPNTS): GPNTS Capability Production Document (CPD)	3	2017	3	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GPS-based PNT Service (GPNTS): GPNTS Acquisition Strategy (AS)	2	2017	2	2017
GPS-based PNT Service (GPNTS): GPNTS Follow-On Production Effort	1	2016	3	2017
GPS-based PNT Service (GPNTS): GPNTS Engineering Development Model (EDM) 2 Delivery	1	2016	1	2016
GPS-based PNT Service (GPNTS): GPNTS Production Contract	4	2017	4	2021
GPS-based PNT Service (GPNTS): GPNTS Buy 1	4	2017	4	2017
GPS-based PNT Service (GPNTS): GPNTS Buy 2	2	2018	2	2018
GPS-based PNT Service (GPNTS): GPNTS Buy 3	2	2019	2	2019
GPS-based PNT Service (GPNTS): GPNTS Buy 4	2	2020	2	2020
GPS-based PNT Service (GPNTS): GPNTS Buy 5	2	2021	2	2021
GPS-based PNT Service (GPNTS): GPNTS Follow On Production Contract	1	2022	4	2022
GPS-based PNT Service (GPNTS): GPNTS Engineering Change Order (ECO)	1	2017	1	2017
GPS-based PNT Service (GPNTS): GPNTS Engineering Change Request (ECR) Phase III	1	2018	1	2018
GPS-based PNT Service (GPNTS): GPNTS Operational Test Readiness Review (OTRR) 1	2	2017	2	2017
GPS-based PNT Service (GPNTS): GPNTS Development Test Readiness Review (DTRR)	2	2019	2	2019
GPS-based PNT Service (GPNTS): GPNTS Operational Test Readiness Review (OTRR) 2	3	2019	3	2019
GPS-based PNT Service (GPNTS): GPNTS Government Testing	1	2016	3	2017
GPS-based PNT Service (GPNTS): GPNTS Govt Testing: Independent Verification and Validation (IV&V)	2	2017	2	2017
GPS-based PNT Service (GPNTS): GPNTS Govt Testing: Operational Assessment (OA)	2	2017	2	2017
GPS-based PNT Service (GPNTS): GPNTS Operational Test and Evaluation (OT&E)	4	2018	4	2019
GPS-based PNT Service (GPNTS): GPNTS Environmental Quality Testing (EQT)	3	2017	2	2018
GPS-based PNT Service (GPNTS): GPNTS Technical Evaluation	1	2019	2	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GPS-based PNT Service (GPNTS): GPNTS NAVCERT	3	2019	1	2020
GPS-based PNT Service (GPNTS): GPNTS Interim Authority to Test (IATT)	1	2017	1	2017
GPS-based PNT Service (GPNTS): GPNTS Combat Certification	1	2018	3	2018
GPS-based PNT Service (GPNTS): GPNTS Authority to Operate (ATO)	1	2019	1	2019
GPS-based PNT Service (GPNTS): GPNTS Naval Training Support Plan (NTSP)	3	2017	3	2017
GPS-based PNT Service (GPNTS): GPNTS Initial Logistics Assessment (ILA)	4	2017	4	2017
GPS-based PNT Service (GPNTS): GPNTS Initial Security Plan (ISP)	4	2017	4	2017
GPS-based PNT Service (GPNTS): GPNTS Ship Change Document (SCD) II	3	2017	3	2017
GPS-based PNT Service (GPNTS): GPNTS SCD III	1	2018	1	2018
GPS-based PNT Service (GPNTS): GPNTS DDG Installation for IOT&E	4	2018	4	2018
GPS Modernization: GPS Modernization M-Code Mandate	1	2018	1	2018
GPS Modernization: GPS Modernization F-18E/F ANAV/MAGR2K-M Rqmts. Dev. & System Eng.	1	2017	4	2022
GPS Modernization: GPS Modernization F-18E/F ANAV/MAGR2K-M Risk Reduction Task Order	2	2017	2	2017
GPS Modernization: GPS Modernization F-18E/F MAGR2K-M PRU Buy	3	2017	3	2017
GPS Modernization: GPS Modernization F-18E/F EGI-M PRU Buy 1	2	2018	2	2018
GPS Modernization: GPS Modernization F-18E/F ANAV/MAGR2K-M Prime Vendor Integration	3	2018	3	2018
GPS Modernization: GPS Modernization EA-18G ANAV/MAGR2K-M Rqmts. Dev. & System Eng.	1	2017	4	2022
GPS Modernization: GPS Modernization EA-18G ANAV/MAGR2K-M Risk Reduction Task Order	2	2017	2	2017
GPS Modernization: GPS Modernization EA-18G MAGR2K-M PRU Buy	3	2017	3	2017
GPS Modernization: GPS Modernization E-18G MAGR2K-M Buy	2	2018	2	2018
GPS Modernization: GPS Modernization EA-18G ANAV/MAGR2K-M Prime Vendor Integration (PVI)	3	2018	3	2018
GPS Modernization: GPS Modernization E-2D EGI-M Rqmts. Dev. & System Eng.	1	2017	4	2020

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GPS Modernization: GPS Modernization E-2D EGI-M Risk Reduction Task Order	2	2017	2	2017
GPS Modernization: GPS Modernization E-2D PRU Buy	2	2018	2	2018
GPS Modernization: GPS Modernization E-2D EGI-M Prime Vendor Integration	3	2018	3	2018
GPS Modernization: GPS Modernization E-6B MAGR2K-M Rqmts. Dev. & System Eng.	1	2018	3	2021
GPS Modernization: GPS Modernization E-6B MAGR2K-M PRU Buy	2	2018	2	2018
GPS Modernization: GPS Modernization E-6B MAGR2K-M Prime Vendor Integration	3	2018	3	2018
GPS Modernization: GPS Modernization MV-22B MAGR2K-M Rqmts. Dev. & System Eng.	1	2018	3	2021
GPS Modernization: GPS Modernization MV-22B MAGR2K-M PRU Buy	2	2018	2	2018
GPS Modernization: GPS Modernization MV-22B MAGR2K-M Prime Vendor Integration	3	2018	3	2018
GPS Modernization: GPS Modernization CMV-22B MAGR2K-M Rqmts. Dev. & System Eng.	1	2018	3	2021
GPS Modernization: GPS Modernization CMV-22B MAGR2K-M PRU Buy	2	2018	2	2018
GPS Modernization: GPS Modernization CMV-22B MAGR2K-M Prime Vendor Integration	3	2018	3	2018
GPS Modernization: GPS Modernization CH-53K EGI-M Rqmts. Dev. & System Eng.	1	2018	4	2020
GPS Modernization: GPS Modernization CH-53K EGI-M Customization	1	2019	1	2019
GPS Modernization: GPS Modernization CH-53K EGI-M PRU Buy	1	2019	1	2019
GPS Modernization: GPS Modernization CH-53K EGI-M Prime Vendor Integration	3	2019	3	2019
GPS Modernization: GPS Modernization KC-130J EGI-M Rqmts. Dev. & System Eng.	1	2018	1	2022
GPS Modernization: GPS Modernization KC-130J EGI-M Customization	1	2019	1	2019
GPS Modernization: GPS Modernization KC-130J EGI-M PRU Buy	1	2020	1	2020
GPS Modernization: GPS Modernization KC-130J EGI-M Prime Vendor Integration	1	2020	1	2020
GPS Modernization: GPS Modernization F-18E/F MAGR2K-M/EGI-M Pre-Test & Test	2	2022	4	2022
GPS Modernization: GPS Modernization EA-18G MAGR2K-M/EGI-M Pre-Test & Test	2	2022	4	2022

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 0921 / *NAVSTAR GPS Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GPS Modernization: GPS Modernization E-2D EGI-M Pre-Test & Test	3	2019	4	2021
GPS Modernization: GPS Modernization E-6B MAGR2K-M Pre-Test & Test	2	2020	3	2021
GPS Modernization: GPS Modernization MV-22B MAGR2K-M Pre-Test & Test	2	2020	3	2021
GPS Modernization: GPS Modernization CMV-22B MAGR2K-M Pre-Test & Test	2	2020	3	2021
GPS Modernization: GPS Modernization CH-53K EGI-M Pre-Test & Test	2	2021	4	2022
GPS Modernization: GPS Modernization KC 130J EGI-M Pre-Test & Test	1	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604777N / *Navigation/Id System*	Project (Number/Name) 1253 / *Combat Ident System*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1253: *Combat Ident System*	181.105	1.291	3.852	2.548	-	2.548	2.048	1.946	1.990	2.029	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

MARK (MK) XIIA Mode 5 provides improved secure cooperative combat identification via Identification Friend or Foe (IFF). Mode 5 is developed in cooperation with North Atlantic Treaty Organization, with the DoD implementation governed by AIMS 03-1000A, AIMS 03-1000B and USN requirements defined in ORD # 577-06-01. IFF product improvements are designed to be installed through upgrade and deficiency correction studies, which in turn, become engineering changes to IFF interrogators and transponders and their associated cryptographic material.

The Navy MK XIIA Mode 5 program was approved for entry in Systems Development and Demonstration phase in August 2003 and into the Production and Deployment Phase and Low Rate Initial Production in July 2006, and Full Rate Production July 2012. The Navy Mode 5 program achieved Initial Operational Capability (IOC) in 2012 in accordance with the ORD. Mode 5 capable equipment was fielded in USN/USMC platforms in accordance with Joint Requirements Oversight Council Memorandums (047-07, 122-08 and 108-13) in support of Joint Mode 5 IOC in 2014 and is expected to meet Joint Full Operational Capability in FY2020.

RDT&E articles include Mode 5 cryptographic modules and associated hardware and software changes for IFF interrogators and transponders, including, but not limited to: AN/APX-118/123, AN/APX-119, and AN/APX-111 equipment. RDT&E units are required for government and contractor labs to support aircraft and ship integrations, test sites and test aircraft.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Mode 5 prototype hardware, cryptographic module	0.890	2.240	1.661	0.000	1.661
Articles:	-	-	-	-	-
Description: Develop kits for installation into existing fleet assets including AN/APX-118/123 Common Digital Transponder, and AN/APX-111 Combined Interrogator Transponder or other interrogator/transponder equipment. Repair and correct deficiencies identified during integration and test. Procure IFF interrogators and transponders, including, but not limited to: AN/APX-123, AN/APX-119, AN/APX-111, cryptographic modules and Mode 5 modification kits to support platform integration and testing. Perform platform integration efforts of Mode 5 equipment for various Type/Model/Series aircraft.					
FY 2016 Accomplishments: Initiated contract action for integration design and development for incorporation of Mode 5 capability in CH-53K aircraft.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 1253 / *Combat Ident System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Begin platform integration design and development for incorporation of Mode 5 capability in the CH-53K aircraft, including System Requirements and Preliminary Design Reviews. ***FY 2018 Base Plans:*** Complete laboratory verification testing of the functionality of the Mode 5 capability in the CH-53K aircraft prior to FY2019 T&E efforts. ***FY 2018 OCO Plans:*** N/A					
Title: Mode 5 Systems Engineering and Integrated Logistics Support (ILS) ***Articles:*** ***Description:*** Performed systems engineering and analysis in support of Mode 5 hardware/software development and engineering change proposals on Identification Friend or Foe interrogators and transponders, including but not limited to: AN/APX-123 Common Digital Transponder, AN/APX-119 Transponder, AN/APX-111 Combined Interrogator Transponder, Cryptographic Modules, Mode 5 Engineering Test Equipment, and Mode 5 support equipment. ***FY 2016 Accomplishments:*** Continued systems engineering integration design and development and logistics planning efforts for various platforms. ***FY 2017 Plans:*** Continue systems engineering efforts for integration of Mode 5 capability in aircraft platforms, to include CH-53K. Perform logistics efforts to develop fleet pubs, training and retrofit Engineering Change Proposal for achieving Mode 5 capability in CH-53K. ***FY 2018 Base Plans:*** Finalize ECP for fleet installation of Mode 5 capability in CH-53K aircraft to support fleet fielding in late FY19. ***FY 2018 OCO Plans:*** N/A	0.370 -	0.412 -	0.338 -	0.000 -	0.338 -
Title: Mode 5 Upgrade Developmental Test & Operational Test ***Articles:*** ***Description:*** Perform Mode 5 integrated and operational test phases for AN/APX-123 Common Transponder, AN/APX-119 Transponder, and AN/APX-111 Combined Interrogator Transponder.	0.031 -	1.200 -	0.549 -	0.000 -	0.549 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604777N / *Navigation/Id System*	**Project (Number/Name)** 1253 / *Combat Ident System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Continued testing of Mode 5 modified equipment including crypto logical devices. Completed Mode 5 Follow on Test and Evaluation for Mode 5 capable AN/APX-111 in F/A-18E/F and EA-18G aircraft. ***FY 2017 Plans:*** Continue testing of Mode 5 modified equipment including crypto logical devices. Perform test planning and execution in support of Mode 5 APX-123 integration on CH-53K platform. ***FY 2018 Base Plans:*** Perform initial ground testing of Mode 5 in the CH-53K aircraft in support of FY19 flight testing and certification efforts. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.291	3.852	2.548	0.000	2.548

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2851: *ID Systems*	29.676	22.177	21.226	-	21.226	26.792	26.707	26.022	26.539	274.506	721.344
• APN/0582: *ID Sys*	41.031	45.768	49.511	-	49.511	41.827	42.668	48.375	49.341	6.388	554.533

Remarks

D. Acquisition Strategy

The Acquisition Strategy is to develop Mode 5 Engineering Change Proposals to modernize Mark XII Identification Friend or Foe (IFF) equipment or insert Mode 5 into existing platforms by JROC memorandums (047-07, 122-08 and 108-13). After integration into all Navy Combat Weapons systems platforms, the Navy will transition Cooperative Identification Capability to Mode 5.

E. Performance Metrics

Continue Full Rate Production and assist in achieving Joint Full Operational Capability in FY2020. Perform studies and analysis for future road mapping of IFF capability.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604800M *I (U)Joint Strike Fighter (JSF) - EMD*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	47,639.443	526.247	531.426	152.934	-	152.934	55.952	1.727	0.547	0.564	0.000	48,908.840
2262: *Joint Strike Fighter EMD STOVL*	47,503.136	495.428	507.078	141.534	-	141.534	55.952	1.727	0.547	0.564	0.000	48,705.966
3350: *F-35B Sustainment/ Capability Enhancements*	136.307	30.819	24.348	11.400	-	11.400	0.000	0.000	0.000	0.000	0.000	202.874
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 198												

A. Mission Description and Budget Item Justification

The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike aircraft for the USN, USAF, USMC and allies. The three variants are the F-35A conventional takeoff and landing; F-35B short takeoff and vertical landing; and the F-35C Aircraft Carrier suitable variant. The F-35A will be a stealthy multi-role aircraft, primary air-to-ground for the Air Force to replace the F-16 and A-10 and complement the F-22. The F-35B variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18 for the Marine Corps, replace the Sea Harrier and GR 7 for the United Kingdom, and replace the AV-8 currently employed by the Italian Navy. The F-35C will provide the Department of the Navy a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.

The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, Norway, and Foreign Military Sales customers are also participants in the JSF program. The program shown here reflects USN, USMC, USAF, and International Partner funding.

Funding at the accomplishment/planned program level is reported as the total of all services and partners as these activities support all aircraft variants.

The System Development and Demonstration (SDD) budget funds a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USMC, and USAF use.

FY07: 1 F-35A flight test article
FY08: 1 F-35B flight test article; 1 F-35B ground test article
FY09: 1 F-35B flight test article; 2 F-35A ground test articles
FY10: 6 flight test articles: 3 F-35A, 2 F-35B, 1 F-35C; 3 ground test articles: 1 F-35B, 2 F-35C
FY11: 4 flight test articles: 1 F-35A, 1 F-35B, 2 F-35C
FY13: 1 F-35C flight test article

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SDD because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604800M *I (U)Joint Strike Fighter (JSF) - EMD*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	537.901	531.426	99.841	-	99.841
Current President's Budget	526.247	531.426	152.934	-	152.934
Total Adjustments	-11.654	0.000	53.093	-	53.093
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-11.655	0.000			
• Program Adjustments	0.000	0.000	53.093	-	53.093
• Rate/Misc Adjustments	0.001	0.000	0.000	-	0.000

Change Summary Explanation

FY2018 Increase: $53.09M to extend F-35 System Development and Demonstration.

Sustainment/Capability Enhancements Standard Operating Unit schedule slipped from 01/2017 to 04/2018.
Initial Operational Test and Evaluation (IOT&E) schedule slipped from 04/2018 to 01/2020.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*				Project (Number/Name) 2262 / *Joint Strike Fighter EMD STOVL*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
2262: *Joint Strike Fighter EMD STOVL*	47,503.136	495.428	507.078	141.534	-	141.534	55.952	1.727	0.547	0.564	0.000	48,705.966
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 198												

Note

Total cost including United States Navy (USN), United States Marine Corps (USMC), International partner contributions and United States Air Force (USAF) funding are: FY16 $1,462.496M, FY17 $1,436.879M and FY18 $527.873M R-2 data reflects variant unique funding only.

R-2A(section B)/R-3 displays total combined program (i.e. not Service specific), including International partners.

F-35 EMD Includes:
USAF PE 0604800F BPAC 653831
USN PE 0604800N Project Unit 2261
USMC PE 0604800M Project Unit 2262

D&S Includes:
USAF PE 0604800F BPAC 653832
USN PE 0604800N Project Unit 3352
USMC PE 0604800M Project Unit 3350

A. Mission Description and Budget Item Justification

The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike aircraft for the USN, USAF, USMC and allies. The three variants are the F-35A Conventional Takeoff and Landing; F-35B Short Takeoff and Vertical Landing; and the F-35C Aircraft Carrier suitable variant. The F-35A will be a stealthy multi-role aircraft, primary air-to-ground for the Air Force to replace the F-16 and A-10 and complement the F-22. The F-35B variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18 for the Marine Corps, replace the Sea Harrier and GR 7 for the United Kingdom, and replace the AV-8 currently employed by the Italian Navy. The F-35C will provide the Department of the Navy a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.

The United Kingdom, other International Partner nations, and Foreign Military Sales customers are also participants in the Joint Strike Fighter program. The program shown here reflects United States Navy (USN), United States Marine Corps, United States Air Force (USAF), and International Partner funding.

The top-line Program Element reflects the unique variant for each Service. Funding at the accomplishment/planned program level is reported as the total of all services and partners as these activities support all aircraft variants.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2262 / *Joint Strike Fighter EMD STOVL*

The System Development and Demonstration (SDD) budget funds a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USMC and USAF use.

FY07: 1 F-35A flight test article
FY08: 1 F-35B flight test article; 1 F-35B ground test article
FY09: 1 F-35B flight test article; 2 F-35A ground test articles
FY10: 6 flight test articles: 3 F-35A, 2 F-35B, 1 F-35C; 3 ground test articles: 1 F-35B, 2 F-35C
FY11: 4 flight test articles: 1 F-35A, 1 F-35B, 2 F-35C
FY13: 1 F-35C flight test article

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: System Development and Demonstration (SDD)	850.841	925.860	331.782	0.000	331.782
Articles:	-	-	-	-	-
Description: SDD execution of the Air System (Lockheed Martin) including International Commonality Efforts; includes airframe, vehicle and mission systems, autonomic logistics, systems engineering & test efforts. ***FY 2016 Accomplishments:*** Continue SDD execution of Air System Lockheed Martin, including International Commonality Effort which includes, airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts including modifications to Operational Testing. Activity aligned to Integrated Master Schedule (IMS) in accordance with variant Intial Operational Capability (IOC). ***FY 2017 Plans:*** Continue SDD execution of Air System Lockheed Martin, including International Commonality Effort which includes, airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts. Activity aligned to IMS in accordance with variant IOC. ***FY 2018 Base Plans:*** Continue SDD execution of Air System Lockheed Martin, including International Commonality Effort which includes, airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts. Activity aligned to IMS in accordance with variant IOC. ***FY 2018 OCO Plans:*** N/A					
Title: F135 Propulsion System	123.198	120.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2262 / *Joint Strike Fighter EMD STOVL*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
Description: SDD execution of the F135 Propulsion System (Pratt & Whitney) including International Commonality Effort; includes testing, autonomic logistics, integration & performing technology maturation efforts. ***FY 2016 Accomplishments:*** Continue SDD execution of the F135 Propulsion System with Pratt & Whitney that includes engine testing, autonomic logistics, integration and performing technology maturation efforts. ***FY 2017 Plans:*** Continue SDD execution of the F135 Propulsion System with Pratt & Whitney that includes engine testing, autonomic logistics, integration and performing technology maturation efforts. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Systems Engineering (SE)	24.844	28.181	0.912	0.000	0.912
Articles:	-	-	-	-	-
Description: SDD SE including systems operations requirements analysis, program integration, requirements integration, and interoperability support. ***FY 2016 Accomplishments:*** Continue SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support. ***FY 2017 Plans:*** Continue SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support. ***FY 2018 Base Plans:*** Continue SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support. ***FY 2018 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2262 / *Joint Strike Fighter EMD STOVL*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: Development Test and Evaluation (DT&E)	291.530	281.672	143.809	0.000	143.809
Articles:	-	-	-	-	-
Description: Government DT&E/Operational Testing (OT) in support of first flight of test aircraft. Elements of DT&E include preparation for flight testing and weapons integration testing. ***FY 2016 Accomplishments:*** Continue government DT&E/OT in support of test aircraft. Continue flight sciences testing of CTOL, STOVL, and CV variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing. ***FY 2017 Plans:*** Continue government DT&E/OT in support of test aircraft. Continue flight sciences testing of CTOL, STOVL, and CV variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing. ***FY 2018 Base Plans:*** Continue government DT&E/OT in support of test aircraft. Continue flight sciences testing of CTOL, STOVL, and CV variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing. ***FY 2018 OCO Plans:*** N/A					
Title: Development Support	171.483	80.945	10.676	0.000	10.676
Articles:	-	-	-	-	-
Description: SDD Support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. ***FY 2016 Accomplishments:*** Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2262 / *Joint Strike Fighter EMD STOVL*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. ***FY 2018 Base Plans:*** Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. ***FY 2018 OCO Plans:*** N/A					
Title: Autonomic Logistics Information System (ALIS) ***Articles:*** ***Description:*** SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2016 Accomplishments:*** Continue SDD execution of ALIS to develop the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2017 Plans:*** Continue SDD execution of ALIS to develop the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2018 Base Plans:*** Continue SDD execution of ALIS to develop the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2018 OCO Plans:*** N/A	0.600 -	0.221 -	40.694 -	0.000 -	40.694 -
Accomplishments/Planned Programs Subtotals	1,462.496	1,436.879	527.873	0.000	527.873
Joint Strike Fighter 0604800F	497.031	403.505	255.745	-	255.745
Joint Strike Fighter 0604800N	453.037	504.296	103.144	-	103.144
International Partner	17.000	22.000	27.450	-	27.450

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2262 / *Joint Strike Fighter EMD STOVL*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Navy Subtotals	495.428	507.078	141.534	0.000	141.534

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E/0604800F: *F-35A Joint Strike Fighter*	497.031	403.505	255.745	-	255.745	69.655	7.796	5.598	0.000	0.000	22,265.229
• International: *International Partner (SDD)*	17.000	22.000	27.450	-	27.450	0.000	0.000	0.000	0.000	0.000	5,013.463
• APAF/0207142F BP10: *F-35A USAF CTOL*	5,259.812	4,997.394	4,544.684	-	4,544.684	4,253.696	4,209.813	4,862.684	4,796.042	144,128.756	198,657.199
• RDT&E/0604800N/2261: *F-35C Joint Strike Fighter (JSF) - EMD*	453.037	504.296	103.144	-	103.144	61.179	1.637	0.454	0.467	0.000	48,627.350
• APN/0605B: *F-35B Joint Strike Fighter STOVL Spares*	111.569	123.252	105.671	-	105.671	92.198	160.150	140.989	143.809	Continuing	Continuing
• APN/0605C: *F-35C Joint Strike Fighter CV Spares*	59.914	26.076	84.591	-	84.591	44.971	52.858	303.608	309.680	Continuing	Continuing
• MILCON 0207142F: *USAF MILCON Operations*	132.850	305.700	80.000	-	80.000	27.500	0.000	0.000	0.000	1,312.100	2,511.350
• APAF/0207142F BP11: *USAF Modification Funding*	70.167	175.811	68.270	-	68.270	230.448	279.814	259.978	301.899	Continuing	Continuing
• FOD/0207142F: *USAF Follow-on Development (FoD)*	47.023	127.302	299.408	-	299.408	463.321	474.971	396.488	263.548	Continuing	Continuing
• 0207142F/USAF BP16: *USAF Joint Strike Fighter Initial Spares*	229.582	362.792	320.831	-	320.831	319.151	416.722	399.361	394.654	3,893.112	7,567.519
• USAF/OPAF 0207142F: *USAF OPAF*	3.858	2.333	3.326	-	3.326	3.310	2.993	2.463	2.507	Continuing	Continuing
• APN/0592: *F-35B STOVL Series*	204.464	34.928	34.963	-	34.963	70.305	67.039	79.174	80.761	Continuing	Continuing
• APN/0593: *F-35C CV Series*	48.527	26.004	31.689	-	31.689	22.344	14.155	13.404	13.672	Continuing	Continuing
• RDT&E/0604800N/3352: *F-35C Sustainment/ Capability Enhancements*	35.666	24.420	5.787	-	5.787	4.995	0.000	0.000	0.000	0.000	207.175

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	Project (Number/Name) 2262 / *Joint Strike Fighter EMD STOVL*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• USAF SDD BP 653832: *JSF Deployability and Suitability Enhancements*	78.901	46.962	37.202	-	37.202	0.000	0.000	0.000	0.000	0.000	238.599
• PAF/0207142F BP10: *F-35A JSF CTOL Advance Procurement*	460.260	404.500	780.300	-	780.300	405.200	1,003.600	965.300	414.700	13,451.541	20,181.883
• DCA/0207142F 676011: *Dual Capable Aircraft (DCA)*	4.967	25.743	35.122	-	35.122	47.016	49.026	67.040	62.599	Continuing	Continuing
• APN/0147: *F-35C Joint Strike Fighter CV*	1,062.542	939.280	663.232	-	663.232	1,302.363	2,016.259	2,835.305	2,992.701	30,639.555	55,785.279
• APN/0152C: *F-35B Joint Strike Fighter STOVL AP*	203.060	233.648	413.450	-	413.450	228.492	231.802	220.822	225.245	1,959.119	4,802.154
• APN/0152: *F-35B Joint Strike Fighter STOVL*	2,291.599	2,243.741	2,631.787	-	2,631.787	2,660.443	2,723.935	2,816.841	2,821.572	22,732.766	47,011.821
• DoN MILCON: *DoN JSF MILCON*	94.420	230.900	64.660	-	64.660	121.990	119.800	0.000	0.000	642.400	1,406.074
• International 2: *Intl Production/ Reprogramming Lab*	189.922	185.641	124.114	-	124.114	151.776	150.588	149.848	87.119	Continuing	Continuing
• OPN/4268: *Logistics Information System (ALIS)*	48.773	39.099	34.032	29.245	63.277	32.742	46.073	47.389	62.299	Continuing	Continuing
• MC/0207597F: *USAF MILCON Training*	65.400	20.000	21.000	-	21.000	34.000	15.900	0.000	0.000	0.000	156.300
• International 3: *International R&D FoM/D&S*	83.595	84.602	158.273	-	158.273	159.649	162.023	167.383	160.111	Continuing	Continuing
• OPN 902010 S8JC: *Aviation Support Equipment (ALIS)*	2.946	0.881	2.297	-	2.297	2.321	0.139	1.977	0.000	Continuing	Continuing
• USAF O&M: *USAF O&M*	312.557	425.978	452.906	-	452.906	555.687	873.270	998.979	958.708	Continuing	Continuing
• USAF MILCON 0502635F: *USAF MILCON Air National Guard*	0.000	15.100	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	15.100
• USN 2936: *F-35C Follow-on Development (CV)*	20.544	63.387	139.942	-	139.942	224.712	228.707	188.678	120.192	Continuing	Continuing
• International Unique: *Intl Unique (SDD/PSFD)*	38.483	32.374	15.566	-	15.566	0.000	0.000	0.000	0.000	0.000	482.417

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2262 / *Joint Strike Fighter EMD STOVL*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

The SDD program consists of a cost-reimbursement contract awarded to Lockheed Martin Aeronautics Company to develop the F-35 Air System, consisting of three aircraft variants and its associated logistics support system, for the U.S. Services and international participants. Similarly, a cost-reimbursement contract was awarded to Pratt & Whitney to develop the F135 propulsion system. Ground and flight testing will be conducted during development to accomplish validation and verification, with the extensive use of modeling and simulation to offset the risk of this large, complex, and concurrent lifecycle program. A comprehensive logistics support environment, including an integrated training system for aircrew, maintenance, and support personnel, is also being developed.

On 25 April 2011, the Department of Defense terminated the development of the General Electric Rolls-Royce Fighter Engine Team F136 propulsion system.

The F-35 Program has made international involvement a key element of the acquisition strategy. This includes international partnership in the development, production, and sustainment phases of the lifecycle. Additional international participation includes Foreign Military Sales arrangements.

In Fiscal Year 2007, separate cost-type contracts were awarded to Lockheed Martin Aeronautics Company and Pratt & Whitney to begin low rate initial production for F-35 air vehicles, propulsion systems, and sustainment for the fielded systems. Transition to fixed-price-type procurement contracts occurred with the fourth low rate lot. To provide logistics support for delivered aircraft, Performance-Based Logistics cost-type contracts will be awarded to Lockheed Martin Aeronautics Company and Pratt & Whitney.

At the completion of Low Rate Initial Production, a Defense Acquisition Board review, and Milestone Decision Authority approval, the F-35 Program will enter Full Rate Production. Fixed-price procurement contracts will be awarded for F-35 air vehicles and propulsion systems for the U.S. Services and international participants. Multiyear procurement authority for the F-35 Air System will be requested for Full Rate Production. Concurrently, a fixed-price-type Performance Based Logistics contracts for sustainment will be requested to support multi-Service and multi-national requirements.

E. Performance Metrics

The following are the key performance parameters from the F-35 Selected Acquisition Report:

Performance Metrics reflect Key Program Performance data.

Combat Radius
F-35A Meets/Exceeds Tripwire Requirement
F-35B Meets/Exceeds Tripwire Requirement

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2262 / *Joint Strike Fighter EMD STOVL*

F-35C Meets/Exceeds Tripwire Requirement

CV Recovery Performance
Maximum Approach Speed at required carrier landing weight

Mission Reliability
F-35A Meets/Exceeds Tripwire Requirement
F-35B Meets/Exceeds Tripwire Requirement
F-35C Meets/Exceeds Tripwire Requirement

Sortie Generation Rate
F-35A Meets Tripwire Requirement
F-35B Meets Tripwire Requirement
F-35C Meets Tripwire Requirement

Logistics Footprint
F-35A Less than or equal to 8 C-17 equivalents
F-35B Less than or equal to 8 C-17 equivalents
F-35C Less than or equal to 38,800 cu ft., 217 ST

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	Project (Number/Name) 2262 / *Joint Strike Fighter EMD STOVL*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development - SDD	C/CPIF	Lockheed Martin : Ft. Worth, TX	30,424.313	795.482	Dec 2015	774.642	Dec 2016	274.720	Dec 2017	-		274.720	170.619	32,439.776	32,439.776
Primary Hardware Development - Award Fee	C/CPIF	Lockheed Martin : Ft. Worth, TX	1,709.429	17.830	Dec 2015	11.430	Dec 2016	35.000	Dec 2017	-		35.000	2.500	1,776.189	1,776.189
Primary Hardware Development - ALIS	C/CPIF	Lockheed Martin : Ft. Worth, TX	461.717	0.600	Dec 2015	0.221	Dec 2016	40.694	Dec 2017	-		40.694	27.400	530.632	530.632
Primary Hardware Development - 0031	C/CPFF	Lockheed Martin : Ft. Worth, TX	0.337	0.000		0.506	Dec 2016	0.169	Dec 2017	-		0.169	0.000	1.012	1.012
Primary Hardware Development - 0020	C/CPFF	Lockheed Martin : Ft. Worth, TX	45.120	36.718	Dec 2015	139.281	Dec 2016	21.893	Dec 2017	-		21.893	0.000	243.012	243.012
Primary Hardware Development - 0016	C/CPFF	Lockheed Martin : Ft. Worth, TX	15.045	0.811	Dec 2015	0.000		0.000		-		0.000	0.000	15.856	15.856
Primary Hardware Development - SDD	C/CPIF	Pratt and Whitney : Hartford, CT	7,180.563	115.765	Dec 2015	105.448	Dec 2016	0.000		-		0.000	0.000	7,401.776	7,401.776
Primary Hardware Development - Award Fee	C/CPIF	Pratt and Whitney : Hartford, CT	670.213	7.433	Dec 2015	14.552	Dec 2016	0.000		-		0.000	0.000	692.198	692.198
Systems Engineering	Various	Various : Various	414.111	21.260	Nov 2015	23.577	Nov 2016	0.911	Dec 2017	-		0.911	0.000	459.859	459.859
Prior Year No Longer Funded in FYDP	Various	Various : Various	2,893.266	0.000		0.000		0.000		-		0.000	0.000	2,893.266	2,893.266
		Subtotal	43,814.114	995.899		1,069.657		373.387		-		373.387	200.519	46,453.576	46,453.576

Remarks

Contract type prior to 2013 was CPAF.
Cumulative Award Fee earned in prior years for Lockheed Martin is 86%.
Cumulative Award Fee earned in prior years for Pratt and Whitney is 94%.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - AFFTC/Eglin	Various	Eglin AFB : Eglin, FL	133.721	5.205	Nov 2015	1.834	Nov 2016	0.830	Nov 2017	-		0.830	0.000	141.590	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	Project (Number/Name) 2262 / *Joint Strike Fighter EMD STOVL*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - AFLCMC/AFRL	Various	AFLCMC/AFRL : Various	65.104	10.725	Nov 2015	3.133	Nov 2016	0.000		-		0.000	0.000	78.962	-
Engine Test and Evaluation Support - AEDC/Fuel	Various	Various : Various	191.102	8.845	Nov 2015	3.771	Nov 2016	0.000		-		0.000	0.000	203.718	-
Development Support - Miscellaneous	Various	Various : Various	110.915	12.601	Nov 2015	12.356	Nov 2016	2.927	Nov 2017	-		2.927	0.764	139.563	-
Software Development Support	Various	NAWC WD : China Lake, CA	152.642	10.533	Nov 2015	4.312	Nov 2016	0.000		-		0.000	0.000	167.487	-
Development Support	Various	NAWC AD : Patuxent, MD	406.999	98.485	Nov 2015	41.726	Nov 2016	6.913	Nov 2017	-		6.913	0.000	554.123	-
Prior Year No Longer Funded in FYDP	Various	Various : Various	77.641	0.000		0.000		0.000		-		0.000	0.000	77.641	-
		Subtotal	1,138.124	146.394		67.132		10.670		-		10.670	0.764	1,363.084	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test and Evaluation	Various	NAWC WD : China Lake, CA	38.905	1.640	Nov 2015	2.712	Nov 2016	0.000		-		0.000	0.000	43.257	-
Developmental Test and Evaluation	Various	NAWC AD : Patuxent River, MD	668.838	83.330	Nov 2015	54.944	Nov 2016	4.400	Nov 2017	-		4.400	0.000	811.512	-
Developmental Test and Evaluation	Various	Edwards AFB : Edwards AFB, CA	618.609	65.334	Nov 2015	54.976	Nov 2016	4.400	Nov 2017	-		4.400	0.000	743.319	-
Developmental Test and Evaluation - Other (including Classified PIDs)	Various	Other (incl Classified PIDs) : Various	204.506	36.766	Nov 2015	30.602	Nov 2016	2.400	Nov 2017	-		2.400	0.000	274.274	-
Operational Test and Evaluation Support	Various	WEPS/Eglin : Various	27.829	0.000		0.000		0.000		-		0.000	0.000	27.829	-
Operational Test and Evaluation Support	Various	OT-AFOTEC/ AFFTC : Kirkland	179.619	24.926	Nov 2015	35.436	Nov 2016	41.976	Nov 2017	-		41.976	2.150	284.107	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	Project (Number/Name) 2262 / *Joint Strike Fighter EMD STOVL*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		AFB, NM/Eglin AFB, FL													
Operational Test and Evaluation Support	Various	OT-JITC/OPTEC : Various	36.435	24.808	Nov 2015	42.956	Nov 2016	71.886	Nov 2017	-		71.886	2.143	178.228	-
Operational Test and Evaluation Support	Various	OT-CHLK : China Lake, CA	0.000	3.999	Nov 2015	9.912	Nov 2016	15.392	Nov 2017	-		15.392	0.000	29.303	-
Operational Test and Evaluation Support	Various	OT-Various : Various	0.105	7.718	Nov 2015	2.775	Nov 2016	3.274	Nov 2017	-		3.274	0.000	13.872	-
		Subtotal	1,774.846	248.521		234.313		143.728		-		143.728	4.293	2,405.701	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Security System High BOS	C/FP	Mantech : Arlington, VA	0.000	7.845	Dec 2015	8.037	Dec 2016	0.000		-		0.000	0.000	15.882	15.882
AFLCMC Civilian Pay	Various	AFLCMC CIVPAY : Wright Patterson, AFB, OH	94.833	25.478	Oct 2015	10.270	Oct 2016	0.000		-		0.000	0.000	130.581	-
Program Management Support	C/CPFF	Allutiiq : Arlington, VA	1.934	0.279	Dec 2015	0.192	Dec 2016	0.000		-		0.000	0.000	2.405	2.405
Facilities BOSS	WR	Various : Various	26.070	6.702	Dec 2015	9.013	Dec 2016	0.000		-		0.000	0.000	41.785	-
CIO ODCs	Various	Various : Various	9.058	3.963	Dec 2015	7.256	Dec 2016	0.000		-		0.000	0.000	20.277	-
Travel	Various	Various : Various	21.959	2.871	Oct 2015	2.343	Oct 2016	0.088	Dec 2017	-		0.088	0.000	27.261	-
Program Management Support	Various	Jacobs BOSS : Arlington, VA	26.012	24.428	Dec 2015	24.686	Dec 2016	0.000		-		0.000	0.000	75.126	-
OPS - Cost/FM/EV ACT-I	Various	OPS - Cost/FM/EV : Arlington, VA	2.000	0.000		3.845	Dec 2016	0.000		-		0.000	0.000	5.845	-
Program Management Support	Various	Andrews AFB : Camp Springs, MD	0.242	0.116	Dec 2015	0.135	Dec 2016	0.000		-		0.000	0.000	0.493	-
Prior Year No Longer Funded in FYDP	Various	Various : Various	593.944	0.000		0.000		0.000		-		0.000	0.000	593.944	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	Project (Number/Name) 2262 / *Joint Strike Fighter EMD STOVL*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			776.052	71.682		65.777		0.088		-		0.088	0.000	913.599	-

Remarks

Cumulative Award Fee earned in prior years for Stanley is 99%.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals	47,503.136	1,462.496		1,436.879		527.873		-		527.873	205.576	51,135.960	-
Joint Strike Fighter 0604800F	-	497.031		403.505		255.745		-		255.745			-
Joint Strike Fighter 0604800N	-	453.037		504.296		103.144		-		103.144			-
International Partner	-	17.000		22.000		27.450		-		27.450			-
Project Cost Totals	47,503.136	495.428		507.078		141.534		-		141.534	205.576	51,135.960	-

Remarks

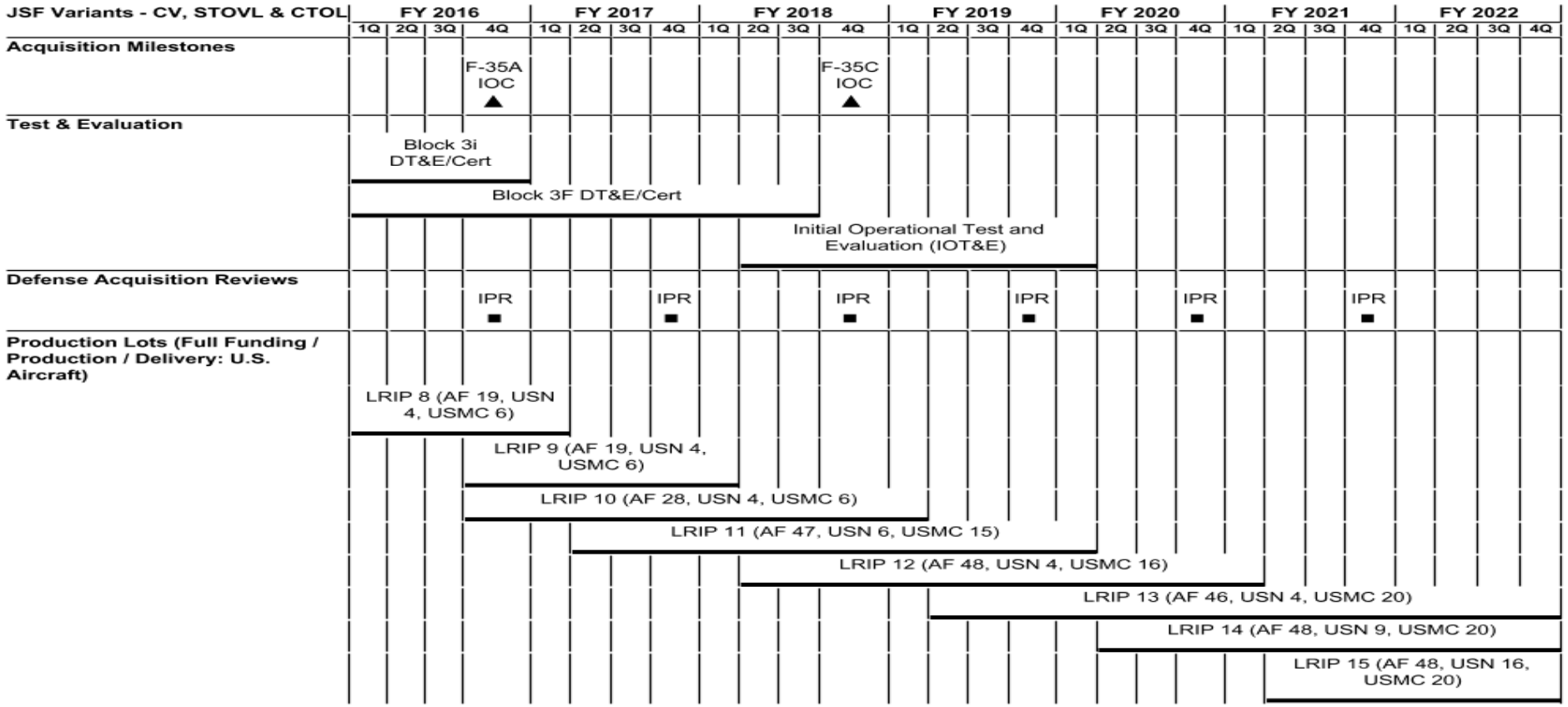
Subtotals and totals may not add due to rounding.

NOTE 1: Prior Years reflect $21,025.899M USAF/$18,858.842M USN/$2,671.382 USMC /$4,947.013 International/Total $47,503.136M
FY 2016 reflects $497.031M USAF/$453.037M USN/$495.428M USMC/$17.000M International/Total $1,462.496M
FY 2017 reflects $403.505M USAF/$504.296M USN/$507.078M USMC/$22.000M International/Total $1,436.879M
FY 2018 reflects $255.745M USAF/$103.144M USN/$141.534M USMC/$27.450M International/Total $ 527.873M

JSF EMD Includes:
USAF PE 0604800F BPAC 653831
USN PE 0604800N Project Unit 2261
USMC PE 0604800M Project Unit 2262

D&S Includes:
USAF PE 0604800F BPAC 653832
USN PE 0604800N Project Unit 3352
USMC PE 0604800M Project Unit 3350

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2262 / *Joint Strike Fighter EMD STOVL*



2018PB - 0604800M - 2262

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2262 / *Joint Strike Fighter EMD STOVL*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
JSF Variants - CV, STOVL & CTOL				
Acquisition Milestones: F-35A Initial Operational Capability	4	2016	4	2016
Acquisition Milestones: F-35C Initial Operational Capability	4	2018	4	2018
Test & Evaluation: Test and Evaluation: Block 3i DT&E/Cert	1	2016	4	2016
Test & Evaluation: Test and Evaluation: Block 3F DT&E/Cert	1	2016	3	2018
Test & Evaluation: Test and Evaluation: Initial Operational Test and Evaluation (IOT&E)	2	2018	1	2020
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-16	4	2016	4	2016
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-17	4	2017	4	2017
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-18	4	2018	4	2018
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-19	4	2019	4	2019
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-20	4	2020	4	2020
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-21	4	2021	4	2021
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 8 Full Funding / Production / Delivery	1	2016	1	2017
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 9 Full Funding / Production / Delivery	4	2016	1	2018
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 10 Full Funding / Production / Delivery	4	2016	1	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2262 / *Joint Strike Fighter EMD STOVL*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 11 Full Funding / Production / Delivery	2	2017	1	2020
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 12 Full Funding / Production / Delivery	2	2018	1	2021
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 13 Full Funding / Production / Delivery	2	2019	4	2022
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 14 Full Funding / Production / Delivery	2	2020	4	2022
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 15 Full Funding / Production / Delivery	2	2021	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	Project (Number/Name) 3350 / *F-35B Sustainment/Capability Enhancements*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3350: *F-35B Sustainment/ Capability Enhancements*	136.307	30.819	24.348	11.400	-	11.400	0.000	0.000	0.000	0.000	0.000	202.874
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Total cost including United States Navy (USN), United States Marine Corps (USMC), United States Air Force (USAF) and International Partner contributions funding is: FY16 $184.378M, FY17 $108.761M and FY18 $61.270M

R-2A table shown above reflect service funding only.

R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

D&S Includes:
USAF PE 64800F BPAC 653832
USN PE 0604800N Project Unit 3352
USMC PE 0604800M Project Unit 3350

A. Mission Description and Budget Item Justification

Funds enhancements to the deployability and suitability of the air system such as low observable (LO) maintenance enhancements, security architecture updates, redesign of obsolete items, and integrated training simulators. These enhancements will provide vital on-demand support to the war-fighter within a deployed environment and are not funded via the existing System Development and Demonstration (SDD) program or tied to Block 4 Operational Flight Program development. Funding will result in achieving targeted suitability, maintainability, and affordability returns employing the F-35 in deployed or austere locations.

-Funding at the accomplishment/planned program level is reported as the total of all services as these activities support all aircraft variants. By agreement, USN and USMC funding shares are approximately equal and when combined are equal to the USAF share.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Sustainment and Capability Enhancements	118.070	64.064	26.030	0.000	26.030
Articles:	-	-	-	-	-
Description: Apply disciplined systems engineering, refinement of requirements, develop and acquire					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3350 / *F-35B Sustainment/Capability Enhancements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
suitability and maintainability of the air system such as decentralized maintenance capabilities, LO maintenance enhancements, security architecture updates, redesign of obsolete items and integrated training simulators. ***FY 2016 Accomplishments:*** Continue to conduct systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements. Increase is to perform sustaining engineering, development and test activities necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare. This includes funding for suitability enhancements such as Standard Operating Unit Version 2 and Band 2/5 efforts. ***FY 2017 Plans:*** Continue to conduct systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements. Increase is to perform sustaining engineering, development and test activities necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare. This includes funding for suitability enhancements such as Standard Operating Unit Version 2 and Band 2/5 efforts. ***FY 2018 Base Plans:*** Continue to conduct systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements. Increase is to perform sustaining engineering, development and test activities necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare. This includes funding for suitability enhancements such as Standard Operating Unit Version 2 and Band 2/5 efforts. ***FY 2018 OCO Plans:*** N/A					
Title: Development Support ***Articles:*** ***Description:*** SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. ***FY 2016 Accomplishments:***	16.592 -	3.556 -	1.000 -	0.000 -	1.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3350 / *F-35B Sustainment/Capability Enhancements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to initiate development enhancement support for Deployable Autonomic Logistics Information System, decentralized maintenance capabilities, Low Observable maintenance enhancements, security architecture updates, redesign of obsolete items, and integrated training simulators. ***FY 2017 Plans:*** Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. Development Support decrease is due to across the board reduction between both services. ***FY 2018 Base Plans:*** Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. Development Support decrease is due to across the board reduction between both services. ***FY 2018 OCO Plans:*** N/A					
Title: Development Test and Evaluation	1.609	1.440	0.500	0.000	0.500
Articles:	-	-	-	-	-
Description: Verification and testing for deployability and suitability enhancements. ***FY 2016 Accomplishments:*** Continue to initiate government test and evaluation of capability enhancements for Deployable Autonomic Logistics Information system, and LO maintenance enhancements. ***FY 2017 Plans:*** Continue to initiate government test and evaluation of capability enhancements for Deployable Autonomic Logistics Information system, and LO maintenance enhancements. ***FY 2018 Base Plans:*** Continue to initiate government test and evaluation of capability enhancements for Deployable Autonomic Logistics Information system, and LO maintenance enhancements. ***FY 2018 OCO Plans:*** N/A					
Title: Autonomic Logistics Information System	48.107	39.701	33.740	0.000	33.740

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3350 / *F-35B Sustainment/Capability Enhancements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
Description: SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2016 Accomplishments:*** SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2017 Plans:*** SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2018 Base Plans:*** SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	184.378	108.761	61.270	0.000	61.270
Joint Strike Fighter 0604800F	78.901	46.962	37.202	-	37.202
International Partner	38.992	13.031	6.881	-	6.881
Joint Strike Fighter 0604800N 3352	35.666	24.420	5.787	-	5.787
Navy Subtotals	30.819	24.348	11.400	0.000	11.400

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E/0604800F: *F-35A Joint Strike Fighter*	497.031	403.505	255.745	-	255.745	69.655	7.796	5.598	0.000	0.000	22,265.229
• International: *International Partner (SDD)*	17.000	22.000	27.450	-	27.450	0.000	0.000	0.000	0.000	0.000	5,013.463

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	Project (Number/Name) 3350 / *F-35B Sustainment/Capability Enhancements*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APAF/0207142F BP10: *F-35A USAF CTOL*	5,259.812	4,997.394	4,544.684	-	4,544.684	4,253.696	4,209.813	4,862.684	4,796.042	144,128.756	198,657.199
• RDT&E/0604800N/2261: *F-35C Joint Strike Fighter (JSF) - EMD*	453.037	504.296	103.144	-	103.144	61.179	1.637	0.454	0.467	0.000	48,627.350
• APN/0605B: *F-35B Joint Strike Fighter STOVL Spares*	111.569	123.252	105.671	-	105.671	92.198	160.150	140.989	143.809	Continuing	Continuing
• APN/0605C: *F-35C Joint Strike Fighter CV Spares*	59.914	26.076	84.591	-	84.591	44.971	52.858	303.608	309.680	Continuing	Continuing
• MILCON 0207142F: *USAF MILCON Operations*	132.850	305.700	80.000	-	80.000	27.500	0.000	0.000	0.000	1,312.100	2,511.350
• APAF/0207142F BP11: *USAF Modification Funding*	70.167	175.811	68.270	-	68.270	230.448	279.814	259.978	301.899	Continuing	Continuing
• FOD/0207142F: *USAF Follow-on Development (FoD)*	47.023	127.302	299.408	-	299.408	463.321	474.971	396.488	263.548	Continuing	Continuing
• 0207142F/USAF BP16: *USAF Joint Strike Fighter Initial Spares*	229.582	362.792	320.831	-	320.831	319.151	416.722	399.361	394.654	3,893.112	7,567.519
• USAF/OPAF 0207142F: *USAF OPAF*	3.858	2.333	3.326	-	3.326	3.310	2.993	2.463	2.507	Continuing	Continuing
• APN/0592: *F-35B STOVL Series*	204.464	34.928	34.963	-	34.963	70.305	67.039	79.174	80.761	Continuing	Continuing
• APN/0593: *F-35C CV Series*	48.527	26.004	31.689	-	31.689	22.344	14.155	13.404	13.672	Continuing	Continuing
• RDT&E/0604800N/3352: *F-35C Sustainment/ Capability Enhancements*	35.666	24.420	5.787	-	5.787	4.995	0.000	0.000	0.000	0.000	207.175
• USAF SDD BP 653832: *Deployability and Suitability Enhancements*	78.901	46.962	37.202	-	37.202	0.000	0.000	0.000	0.000	0.000	238.599
• PAF/0207142F BP10: *F-35A JSF CTOL Advance Procurement*	460.260	404.500	780.300	-	780.300	405.200	1,003.600	965.300	414.700	13,451.541	20,181.883
• DCA/0207142F 676011: *Dual Capable Aircraft (DCA)*	4.967	25.743	35.122	-	35.122	47.016	49.026	67.040	62.599	Continuing	Continuing
• APN/0147: *F-35C Joint Strike Fighter CV*	1,062.542	939.280	663.232	-	663.232	1,302.363	2,016.259	2,835.305	2,992.701	30,639.555	55,785.279

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3350 / *F-35B Sustainment/Capability Enhancements*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0152C: *F-35B Joint Strike Fighter STOVL AP*	203.060	233.648	413.450	-	413.450	228.492	231.802	220.822	225.245	1,959.119	4,802.154
• APN/0152: *F-35B Joint Strike Fighter STOVL*	2,291.599	2,243.741	2,631.787	-	2,631.787	2,660.443	2,723.935	2,816.841	2,821.572	22,732.766	47,011.821
• DoN MILCON: *DoN JSF MILCON*	94.420	230.900	64.660	-	64.660	121.990	119.800	0.000	0.000	642.400	1,406.074
• International 2: *International Production/Reprogramming Lab*	189.922	185.641	124.114	-	124.114	151.776	150.588	149.848	87.119	Continuing	Continuing
• OPN/4268: *Logistics Information System (ALIS)*	48.773	39.099	34.032	29.245	63.277	32.742	46.073	47.389	62.299	Continuing	Continuing
• MC/0207597F: *USAF MILCON Training*	65.400	20.000	21.000	-	21.000	34.000	15.900	0.000	0.000	0.000	156.300
• International 3: *International R&D FoM/D&S*	83.595	84.602	158.273	-	158.273	159.649	162.023	167.383	160.111	Continuing	Continuing
• OPN 902010 S8JC: *Aviation Support Equipment (ALIS)*	2.946	0.881	2.297	-	2.297	2.321	0.139	1.977	0.000	Continuing	Continuing
• USAF O&M: *USAF O&M*	312.557	425.978	452.906	-	452.906	555.687	873.270	998.979	958.708	Continuing	Continuing
• USAF MILCON 0502635F: *USAF MILCON Air National Guard*	0.000	15.100	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	15.100
• USN 2936: *F-35C Follow-on Development (CV)*	20.544	63.387	139.942	-	139.942	224.712	228.707	188.678	120.192	Continuing	Continuing
• International Unique: *Imtl Unique (SDD/PSFD)*	38.483	32.374	15.566	-	15.566	0.000	0.000	0.000	0.000	0.000	482.417

Remarks

D. Acquisition Strategy

Implement Joint Strike Fighter Joint Executive Steering Board/Configuration Steering Board approved enhancements to existing capabilities through existing contracts using the engineering change proposal process. When appropriate, new cost type contracts may be established.

E. Performance Metrics

The following are the key performance parameters from the F-35 Selected Acquisition Report:

Performance Metrics reflect Key Program Performance data.

Combat Radius
F-35A Meets/Exceeds Tripwire Requirement
F-35B Meets/Exceeds Tripwire Requirement
F-35C Meets/Exceeds Tripwire Requirement

F-35B Performance
Flat Deck (High-High-High Profile Fuel) Meets Requirement In Tripwire Band
Ski Jump (High-Medium-Medium-High Profile Fuel) Meets Requirement In Tripwire Band
Vertical Landing Bring Back Meets Requirement In Tripwire Band

F-35C Recovery
Maximum Approach Speed Meets Requirement In Tripwire Band

Interoperability
Net Ready Criteria- Meets Requirement In Tripwire Band

Radio Frequency Signature Meets/Exceeds Tripwire Requirement

Force Protection
CB Pilot Protection (New Key Performance Parameters Per CN3) - Meets/Exceeds Tripwire Requirement

Mission Reliability
F-35A Meets/Exceeds Tripwire Requirement
F-35B United States Marine Corps (USMC) Meets/Exceeds Tripwire Requirement
F-35B United Kingdom (UK) Meets/Exceeds Tripwire Requirement
F-35C Exceeds Operational Requiremets Document Objective

Sortie Generation Rate
F-35A Meets/Exceeds Tripwire Requirement
F-35B USMC Meets/Exceeds Tripwire Requirement
F-35B UK Meets/Exceeds Tripwire Requirement
F-35C Meets/Exceeds Tripwire Requirement

Logistics Footprints

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3350 / *F-35B Sustainment/Capability Enhancements*

F-35A Meets/Exceeds Tripwire Requirement
F-35B USMC Meets/Exceeds Tripwire Requirement

Logistics Footprint- Volume
F-35B USMC Exceeds ORD Objective
F-35B UK Meets/Exceeds Tripwire Requirement
F-35C Exceeds Operational Requirements Document (ORD) Objective

Logistics Footprint-Weight
F-35B USMC Exceeds ORD Objective
F-35B UK Meets/Exceeds Tripwire Requirement
F-35C Exceeds ORD Objective

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3350 / *F-35B Sustainment/Capability Enhancements*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development - 3002 SDD	C/CPFF	Lockheed Martin : Fort Worth, TX	0.000	41.330	Mar 2016	35.844	Mar 2017	23.655	Mar 2018	-		23.655	4.995	105.824	105.824
Primary Hardware Development - 3002 ALIS	C/CPFF	Lockheed Martin : Fort Worth, TX	87.723	48.107	Mar 2016	39.701	Mar 2017	33.740	Mar 2018	-		33.740	0.000	209.271	209.271
Primary Hardware Development -14-C-002 Band 2/5	C/CPFF	Lockheed Martin : Fort Worth, TX	15.590	76.740	Mar 2016	28.220	Mar 2017	2.375	Mar 2018	-		2.375	0.000	122.925	122.925
		Subtotal	103.313	166.177		103.765		59.770		-		59.770	4.995	438.020	438.020

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various	AFLCMC : Eglin AFB	19.720	13.781	Mar 2016	0.000		0.000		-		0.000	0.000	33.501	-
Development Support	Various	Various : Various	11.668	0.700	Mar 2016	2.410	Mar 2017	1.000	Mar 2018	-		1.000	0.000	15.778	-
		Subtotal	31.388	14.481		2.410		1.000		-		1.000	0.000	49.279	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	Various : Various	0.606	1.404	Mar 2016	0.976	Mar 2017	0.500	Mar 2018	-		0.500	0.000	3.486	-
		Subtotal	0.606	1.404		0.976		0.500		-		0.500	0.000	3.486	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Support	Various	Various : Various	1.000	2.316	Mar 2016	1.610	Mar 2017	0.000		-		0.000	0.000	4.926	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3350 / *F-35B Sustainment/Capability Enhancements*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			1.000	2.316		1.610		0.000		-		0.000	0.000	4.926	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals	136.307	184.378		108.761		61.270		-		61.270	4.995	495.711	-
Joint Strike Fighter 0604800F	-	78.901		46.962		37.202		-		37.202			-
International Partner	-	38.992		13.031		6.881		-		6.881			-
Joint Strike Fighter 0604800N 3352	-	35.666		24.420		5.787		-		5.787			-
Project Cost Totals	136.307	30.819		24.348		11.400		-		11.400	4.995	495.711	-

Remarks

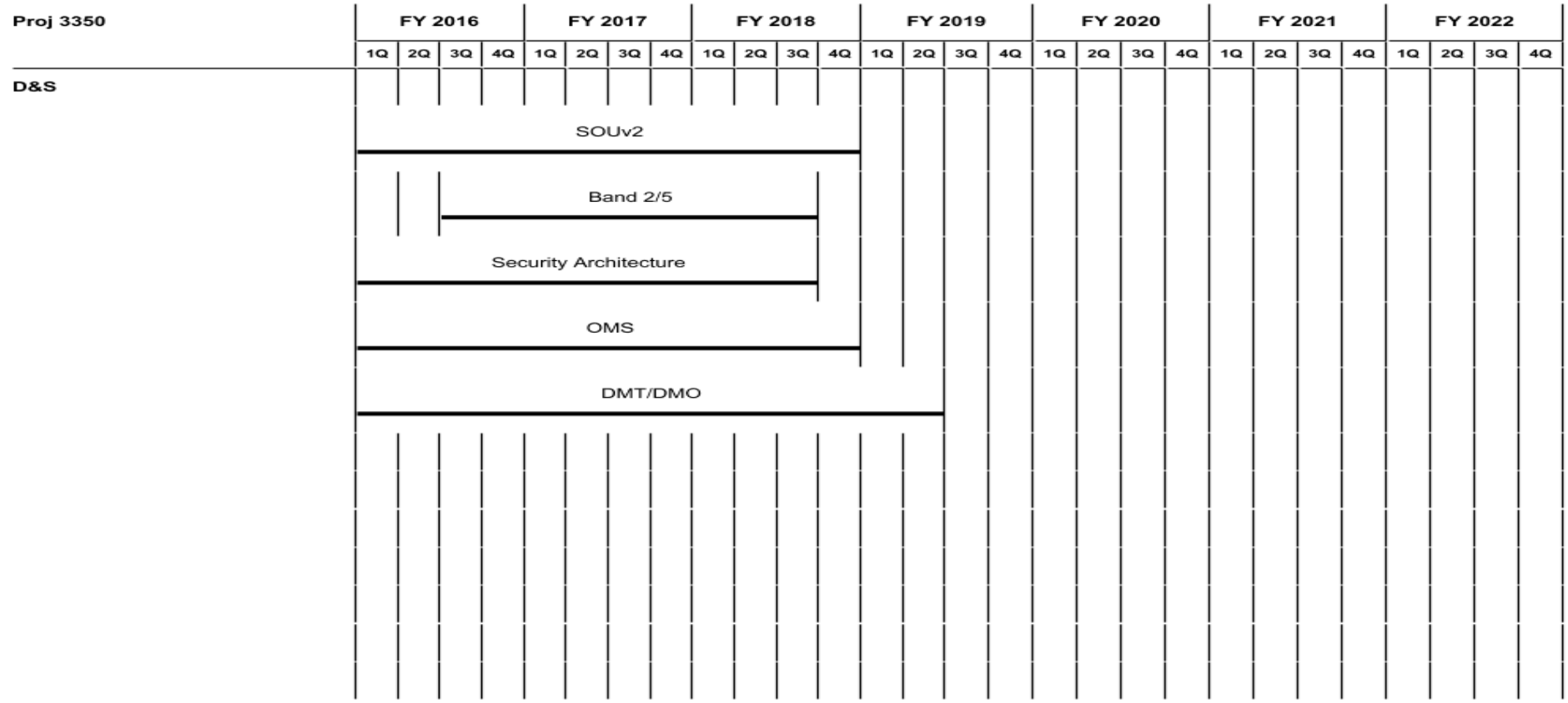
NOTE: Prior Years reflect $75.534M USAF/$32.852M USN/$27.921M USMC/$0.000M International/Total $136.307M
FY 2016 reflects $78.901M USAF/$35.666M USN/$30.819M USMC/$38.992M International/Total $184.378M
FY 2017 reflects $46.962M USAF/$24.420M USN/$24.348M USMC/$13.031M International/Total $108.761M
FY 2018 reflects $37.202M USAF/$ 5.787M USN/$11.400M USMC/$ 6.881M International/Total $ 61.270M

R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

JSF EMD Includes:
USAF PE 0604800F BPAC 653831
USN PE 0604800N Project Unit 2261
USMC PE 0604800M Project Unit 2262

D&S Includes:
USAF PE 0604800F BPAC 653832
USN PE 0604800N Project Unit 3352
USMC PE 0604800M Project Unit 3350

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3350 / *F-35B Sustainment/Capability Enhancements*



2018OSD - 0604800M - 3350

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800M / *(U)Joint Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3350 / *F-35B Sustainment/Capability Enhancements*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3350				
D&S: Standard Operating Unit (SOUv2)	1	2016	4	2018
D&S: Band 2/5	3	2016	3	2018
D&S: Security Architecture	1	2016	3	2018
D&S: Offboard Misson Support (OMS) Redesign	1	2016	4	2018
D&S: Distributed Mission Training/Distributed Mission Operations (DMT/DMO)	1	2016	2	2019

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604800N *I JT Strike Fighter (JSF) - EMD*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	47,639.443	488.703	528.716	108.931	-	108.931	66.174	1.637	0.454	0.467	0.000	48,834.525
2261: *Joint Strike Fighter EMD*	47,503.136	453.037	504.296	103.144	-	103.144	61.179	1.637	0.454	0.467	0.000	48,627.350
3352: *F-35C Sustainment/ Capability Enhancements*	136.307	35.666	24.420	5.787	-	5.787	4.995	0.000	0.000	0.000	0.000	207.175
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 198												

A. Mission Description and Budget Item Justification

The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike aircraft for the USN, USAF, USMC and allies. The three variants are the F-35A conventional takeoff and landing; F-35B short takeoff and vertical landing; and the F-35C Aircraft Carrier suitable variant. The F-35A will be a stealthy multi-role aircraft, primary air-to-ground for the Air Force to replace the F-16 and A-10 and complement the F-22. The F-35B variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18 for the Marine Corps, replace the Sea Harrier and GR 7 for the United Kingdom, and replace the AV-8 currently employed by the Italian Navy. The F-35C will provide the Department of the Navy a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.

The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, Norway, and Foreign Military Sales customers are also participants in the JSF program. The program shown here reflects USN, USMC, USAF, and International Partner funding.

Funding at the accomplishment/planned program level is reported as the total of all services and partners as these activities support all aircraft variants.

The System Development and Demonstration (SDD) budget funds a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USMC, and USAF use.

FY07: 1 F-35A flight test article
FY08: 1 F-35B flight test article; 1 F-35B ground test article
FY09: 1 F-35B flight test article; 2 F-35A ground test articles
FY10: 6 flight test articles: 3 F-35A, 2 F-35B, 1 F-35C; 3 ground test articles: 1 F-35B, 2 F-35C
FY11: 4 flight test articles: 1 F-35A, 1 F-35B, 2 F-35C
FY13: 1 F-35C flight test article

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SDD because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604800N *I JT Strike Fighter (JSF) - EMD*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	504.736	528.716	55.618	-	55.618
Current President's Budget	488.703	528.716	108.931	-	108.931
Total Adjustments	-16.033	0.000	53.313	-	53.313
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-16.033	0.000			
• Program Adjustments	0.000	0.000	53.313	-	53.313
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Change Summary Explanation

FY2018 Increase: $53.313M extend F-35 System Development and Demonstration.

Sustainment/Capability Enhancements Standard Operating Unit schedule slipped from 01/2017 to 04/2018.
Initial Operational Test and Evaluation (IOT&E) schedule slipped from 04/2018 to 01/2020.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604800N / *JT Strike Fighter (JSF) - EMD*				Project (Number/Name) 2261 / *Joint Strike Fighter EMD*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
2261: *Joint Strike Fighter EMD*	47,503.136	453.037	504.296	103.144	-	103.144	61.179	1.637	0.454	0.467	0.000	48,627.350
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Total cost including United States Navy (USN), United States Marine Corps (USMC), International partner contributions and United States Air Force (USAF) funding are: FY16 $1,462.496M, FY17 $1,436.879M and FY18 $527.873M R-2 data reflects variant unique funding only.

R-2A(section B)/R-3 displays total combined Program (i.e. not Service specific), including International partners.

JSF EMD Includes:
USAF PE 0604800F BPAC 653831
USN PE 0604800N Project Unit 2261
USMC PE 0604800M Project Unit 2262

D&S Includes:
USAF PE 0604800F BPAC 653832
USN PE 0604800N Project Unit 3352
USMC PE 0604800M Project Unit 3350

A. Mission Description and Budget Item Justification

The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike aircraft for the USN, USAF, USMC and allies. The three variants are the F-35A conventional takeoff and landing; F-35B short takeoff and vertical landing; and the F-35C Aircraft Carrier suitable variant. The F-35A will be a stealthy multi-role aircraft, primary air-to-ground for the Air Force to replace the F-16 and A-10 and complement the F-22. The F-35B variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18 for the Marine Corps, replace the Sea Harrier and GR 7 for the United Kingdom, and replace the AV-8 currently employed by the Italian Navy. The F-35C will provide the Department of the Navy a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.

The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, Norway, and Foreign Military Sales customers are also participants in the JSF program. The program shown here reflects USN, USMC, USAF, and International Partner funding.

Funding at the accomplishment/planned program level is reported as the total of all services and partners as these activities support all aircraft variants.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2261 / *Joint Strike Fighter EMD*

The System Development and Demonstration (SDD) budget funds a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USAF, and USMC use.

FY07: 1 F-35A flight test article
FY08: 1 F-35B flight test article; 1 F-35B ground test article
FY09: 1 F-35B flight test article; 2 F-35A ground test articles
FY10: 6 flight test articles: 3 F-35A, 2 F-35B, 1 F-35C; 3 ground test articles: 1 F-35B, 2 F-35C
FY11: 4 flight test articles: 1 F-35A, 1 F-35B, 2 F-35C
FY13: 1 F-35C flight test article

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: System Development and Demonstration (SDD)	850.841	925.860	331.782	0.000	331.782
Articles:	-	-	-	-	-
Description: SDD execution of the Air System (Lockheed Martin) including International Commonality Efforts; includes airframe, vehicle and mission systems, autonomic logistics, systems engineering & test efforts.					
FY 2016 Accomplishments: Continue SDD execution of Air System Lockheed Martin, including International Commonality Effort which includes, airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts including modifications to Operational Testing. Activity aligned to Integrated Master Schedule (IMS) in accordance with variant Intial Operational Capability (IOC).					
FY 2017 Plans: Continue SDD execution of Air System Lockheed Martin, including International Commonality Effort which includes, airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts. Activity aligned to IMS in accordance with variant IOC.					
FY 2018 Base Plans: Continue SDD execution of Air System Lockheed Martin, including International Commonality Effort which includes, airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts. Activity aligned to IMS in accordance with variant IOC.					
FY 2018 OCO Plans: N/A					
Title: F135 Propulsion System	123.198	120.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2261 / *Joint Strike Fighter EMD*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: SDD execution of the F135 Propulsion System (Pratt & Whitney) including International Commonality Effort; includes testing, autonomic logistics, integration & performing technology maturation efforts. ***FY 2016 Accomplishments:*** Continue SDD execution of the F135 Propulsion System with Pratt & Whitney that includes engine testing, autonomic logistics, integration and performing technology maturation efforts. ***FY 2017 Plans:*** Continue SDD execution of the F135 Propulsion System with Pratt & Whitney that includes engine testing, autonomic logistics, integration and performing technology maturation efforts. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Systems Engineering (SE) ***Articles:*** ***Description:*** SDD SE including systems operations requirements analysis, program integration, requirements integration, and interoperability support. ***FY 2016 Accomplishments:*** Continue SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support. ***FY 2017 Plans:*** Continue SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support. ***FY 2018 Base Plans:*** Continue SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support. ***FY 2018 OCO Plans:***	24.844 -	28.181 -	0.912 -	0.000 -	0.912 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2261 / *Joint Strike Fighter EMD*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: Development Test and Evaluation (DT&E)	291.530	281.672	143.809	0.000	143.809
Articles:	-	-	-	-	-
Description: Government DT&E/Operational Testing (OT) in support of first flight of test aircraft. Elements of DT&E include preparation for flight testing and weapons integration testing.					
FY 2016 Accomplishments: Continue government DT&E/OT in support of test aircraft. Continue flight sciences testing of CTOL, STOVL, and CV variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing.					
FY 2017 Plans: Continue government DT&E/OT in support of test aircraft. Continue flight sciences testing of CTOL, STOVL, and CV variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing.					
FY 2018 Base Plans: Continue government DT&E/OT in support of test aircraft. Continue flight sciences testing of CTOL, STOVL, and CV variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing.					
FY 2018 OCO Plans: N/A					
Title: Development Support	171.483	80.945	10.676	0.000	10.676
Articles:	-	-	-	-	-
Description: SDD Support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities.					
FY 2016 Accomplishments: Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2261 / *Joint Strike Fighter EMD*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. ***FY 2018 Base Plans:*** Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. ***FY 2018 OCO Plans:*** N/A					
Title: Autonomic Logistics Information System (ALIS) ***Articles:*** ***Description:*** SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2016 Accomplishments:*** Continue SDD execution of ALIS to develop the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2017 Plans:*** Continue SDD execution of ALIS to develop the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2018 Base Plans:*** Continue SDD execution of ALIS to develop the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2018 OCO Plans:*** N/A	0.600 -	0.221 -	40.694 -	0.000 -	40.694 -
Accomplishments/Planned Programs Subtotals	1,462.496	1,436.879	527.873	0.000	527.873
Joint Strike Fighter 0604800F	497.031	403.505	255.745	-	255.745
Joint Strike Fighter 0604800M	495.428	507.078	141.534	-	141.534
International Partner	17.000	22.000	27.450	-	27.450

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2261 / *Joint Strike Fighter EMD*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Navy Subtotals	453.037	504.296	103.144	0.000	103.144

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E/0604800F: *F-35A Joint Strike Fighter SDD*	497.031	403.505	255.745	-	255.745	69.655	7.796	5.598	0.000	0.000	22,265.229
• International: *International Partner (SDD)*	17.000	22.000	27.450	-	27.450	0.000	0.000	0.000	0.000	0.000	5,013.463
• APAF/0207142F BP10: *F-35A USAF CTOL*	5,259.812	4,997.394	4,544.684	-	4,544.684	4,253.696	4,209.813	4,862.684	4,796.042	144,128.756	198,657.199
• RDT&E/0604800M/2262: *F-35B JT Strike Fighter (JSF) - EMD*	495.428	507.078	141.534	-	141.534	55.952	1.727	0.547	0.564	0.000	48,705.966
• APN/0605B: *F-35B Joint Strike Fighter STOVL Spares*	111.569	123.252	105.671	-	105.671	92.198	160.150	140.989	143.809	Continuing	Continuing
• APN/0605C: *F-35C Joint Strike Fighter CV Spares*	59.914	26.076	84.591	-	84.591	44.971	52.858	303.608	309.680	Continuing	Continuing
• MILCON 0207142F: *USAF MILCON Operations*	132.850	305.700	80.000	-	80.000	27.500	0.000	0.000	0.000	1,312.100	2,511.350
• APAF/0207142F BP11: *USAF Modification Funding*	70.167	175.811	68.270	-	68.270	230.448	279.814	259.978	301.899	Continuing	Continuing
• FOD/0207142F: *USAF Follow-on-Development (FoD)*	47.023	127.302	299.408	-	299.408	463.321	474.971	396.488	263.548	Continuing	Continuing
• 0207142F/USAF BP16: *USAF Joint Strike Fighter Initial Spares*	229.582	362.792	320.831	-	320.831	319.151	416.722	399.361	394.654	3,893.112	7,567.519
• USAF/OPAF 0207142F: *USAF OPAF*	3.858	2.333	3.326	-	3.326	3.310	2.993	2.463	2.507	Continuing	Continuing
• APN/0592: *F-35B STOVL Serious*	204.464	34.928	34.963	-	34.963	70.305	67.039	79.174	80.761	Continuing	Continuing
• APN/0593: *F-35C CV Serious*	48.527	26.004	31.689	-	31.689	22.344	14.155	13.404	13.672	Continuing	Continuing
• RDT&E/0604800M/3350: *F-35B Sustainment/ Capability Enhancements*	30.819	24.348	11.400	-	11.400	0.000	0.000	0.000	0.000	0.000	202.874

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800N / *JT Strike Fighter (JSF) - EMD*	Project (Number/Name) 2261 / *Joint Strike Fighter EMD*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• USAF SDD BP 653832: *Deployability and Suitability Enhancements*	78.901	46.962	37.202	-	37.202	0.000	0.000	0.000	0.000	0.000	238.599
• PAF/0207142F BP10: *F-35A JSF CTOL Advance Procurement*	460.260	404.500	780.300	-	780.300	405.200	1,003.600	965.300	414.700	13,451.541	20,181.883
• DCA/0207142F 676011: *Dual Capable Aircraft (DCA)*	4.967	25.743	35.122	-	35.122	47.016	49.026	67.040	62.599	Continuing	Continuing
• APN/0147: *F-35C Joint Strike Fighter CV*	1,062.542	939.280	663.232	-	663.232	1,302.363	2,016.259	2,835.305	2,992.701	30,639.555	55,785.279
• APN/0152C: *F-35B Joint Strike Fighter STOVL AP*	203.060	233.648	413.450	-	413.450	228.492	231.802	220.822	225.245	1,959.119	4,802.154
• APN/0152: *F-35B Joint Strike Fighter STOVL*	2,291.599	2,243.741	2,631.787	-	2,631.787	2,660.443	2,723.935	2,816.841	2,821.572	22,732.766	47,011.821
• DoN MILCON: *DoN JSF MILCON*	94.420	230.900	64.660	-	64.660	121.990	119.800	0.000	0.000	642.400	1,406.074
• International 2: *Intl Production/ Reprogramming Lab*	189.922	185.641	124.114	-	124.114	151.776	150.588	149.848	87.119	Continuing	Continuing
• OPN/4268: *Logistics Information System (ALIS)*	48.773	39.099	34.032	29.245	63.277	32.742	46.073	47.389	62.299	Continuing	Continuing
• MC/0207597F: *USAF MILCON Training*	65.400	20.000	21.000	-	21.000	34.000	15.900	0.000	0.000	0.000	156.300
• International 3: *International R&D FoD/D&S*	83.595	84.602	158.273	-	158.273	159.649	162.023	167.383	160.111	Continuing	Continuing
• OPN 902010 S8JC: *Aviation Support Equipment (ALIS)*	2.946	0.881	2.297	-	2.297	2.321	0.139	1.977	0.000	Continuing	Continuing
• USAF O&M: *USAF O&M*	312.557	425.978	452.906	-	452.906	555.687	873.270	998.979	958.708	Continuing	Continuing
• USAF MILCON 0502635F: *USAF MILCON Air National Guard*	0.000	15.100	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	15.100
• USN 2936: *F-35C Follow-on Development (CV)*	20.544	63.387	139.942	-	139.942	224.712	228.707	188.678	120.192	Continuing	Continuing
• International Unique: *Intl Unique (SDD/PSFD)*	38.483	32.374	15.566	-	15.566	0.000	0.000	0.000	0.000	0.000	482.417

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2261 / *Joint Strike Fighter EMD*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

The SDD program consists of a cost-reimbursement contract awarded to Lockheed Martin Aeronautics Company to develop the F-35 Air System, consisting of three aircraft variants and its associated logistics support system, for the U.S. Services and international participants. Similarly, a cost-reimbursement contract was awarded to Pratt & Whitney to develop the F135 propulsion system. Ground and flight testing will be conducted during development to accomplish validation and verification, with the extensive use of modeling and simulation to offset the risk of this large, complex, and concurrent lifecycle program. A comprehensive logistics support environment, including an integrated training system for aircrew, maintenance, and support personnel, is also being developed.

On 25 April 2011, the Department of Defense terminated the development of the General Electric Rolls-Royce Fighter Engine Team F136 propulsion system.

The F-35 Program has made international involvement a key element of the acquisition strategy. This includes international partnership in the development, production, and sustainment phases of the lifecycle. Additional international participation includes Foreign Military Sales arrangements.

In Fiscal Year 2007, separate cost-type contracts were awarded to Lockheed Martin Aeronautics Company and Pratt & Whitney to begin low rate initial production for F-35 air vehicles, propulsion systems, and sustainment for the fielded systems. Transition to fixed-price-type procurement contracts occurred with the fourth low rate lot. To provide logistics support for delivered aircraft, Performance-Based Logistics cost-type contracts will be awarded to Lockheed Martin Aeronautics Company and Pratt & Whitney.

At the completion of Low Rate Initial Production, a Defense Acquisition Board review, and Milestone Decision Authority approval, the F-35 Program will enter Full Rate Production. Fixed-price procurement contracts will be awarded for F-35 air vehicles and propulsion systems for the U.S. Services and international participants. Multiyear procurement authority for the F-35 Air System will be requested for Full Rate Production. Concurrently, a fixed-price-type Performance Based Logistics contracts for sustainment will be requested to support multi-Service and multi-national requirements.

E. Performance Metrics

The following are the key performance parameters from the F-35 Selected Acquisition Report:

Performance Metrics reflect Key Program Performance data.

Combat Radius
F-35A Meets/Exceeds Tripwire Requirement
F-35B Meets/Exceeds Tripwire Requirement

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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F-35C Meets/Exceeds Tripwire Requirement

CV Recovery Performance
Maximum Approach Speed at required carrier landing weight

Mission Reliability
F-35A Meets/Exceeds Tripwire Requirement
F-35B Meets/Exceeds Tripwire Requirement
F-35C Meets/Exceeds Tripwire Requirement

Sortie Generation Rate
F-35A Meets Tripwire Requirement
F-35B Meets Tripwire Requirement
F-35C Meets Tripwire Requirement

Logistics Footprint
F-35A Less than or equal to 8 C-17 equivalents
F-35B Less than or equal to 8 C-17 equivalents
F-35C Less than or equal to 38,800 cu ft., 217 ST

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development - SDD	C/CPIF	Lockheed Martin : Ft. Worth, TX	30,424.313	795.482	Dec 2015	774.642	Dec 2016	274.720	Dec 2017	-		274.720	170.619	32,439.776	32,439.776
Primary Hardware Development - Award Fee	C/CPIF	Lockheed Martin : Ft. Worth, TX	1,709.429	17.830	Dec 2015	11.430	Dec 2016	35.000	Dec 2017	-		35.000	2.500	1,776.189	1,776.189
Primary Hardware Development - ALIS	C/CPIF	Lockheed Martin : Ft. Worth, TX	461.717	0.600	Dec 2015	0.221	Dec 2016	40.694	Dec 2017	-		40.694	27.400	530.632	530.632
Primary Hardware Development - 0031	C/CPFF	Lockheed Martin : Ft. Worth, TX	0.337	0.000		0.506	Dec 2016	0.169	Dec 2017	-		0.169	0.000	1.012	1.012
Primary Hardware Development - 0020	C/CPFF	Lockheed Martin : Ft. Worth, TX	45.120	36.718	Dec 2015	139.281	Dec 2016	21.893	Dec 2017	-		21.893	0.000	243.012	243.012
Primary Hardware Development - 0016	C/CPFF	Lockheed Martin : Ft. Worth, TX	15.045	0.811	Dec 2015	0.000		0.000		-		0.000	0.000	15.856	15.856
Primary Hardware Development - SDD	C/CPIF	Pratt and Whitney : Hartford, CT	7,180.563	115.765	Dec 2015	105.448	Dec 2016	0.000		-		0.000	0.000	7,401.776	7,401.776
Primary Hardware Development - Award Fee	C/CPIF	Pratt and Whitney : Hartford, CT	670.213	7.433	Dec 2015	14.552	Dec 2016	0.000		-		0.000	0.000	692.198	692.198
Systems Engineering	Various	Various : Various	414.111	21.260	Nov 2015	23.577	Nov 2016	0.911	Dec 2017	-		0.911	0.000	459.859	459.859
Prior Year No Longer Funded in FYDP	Various	Various : Various	2,893.266	0.000		0.000		0.000		-		0.000	0.000	2,893.266	2,893.266
		Subtotal	43,814.114	995.899		1,069.657		373.387		-		373.387	200.519	46,453.576	46,453.576

Remarks

Contract type prior to 2013 was CPAF.
Cumulative Award Fee earned in prior years for Lockheed Martin is 86%.
Cumulative Award Fee earned in prior years for Pratt and Whitney is 94%.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - AFFTC/Eglin	Various	Eglin AFB : Eglin, FL	133.721	5.205	Nov 2015	1.834	Nov 2016	0.830	Nov 2017	-		0.830	0.000	141.590	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2261 / *Joint Strike Fighter EMD*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - AFLCMC/AFRL	Various	AFLCMC/AFRL : Various	65.104	10.725	Nov 2015	3.133	Nov 2016	0.000		-		0.000	0.000	78.962	-
Engine Test and Evaluation Support - AEDC/Fuel	Various	Various : Various	191.102	8.845	Nov 2015	3.771	Nov 2016	0.000		-		0.000	0.000	203.718	-
Development Support - Miscellaneous	Various	Various : Various	110.915	12.601	Nov 2015	12.356	Nov 2016	2.927	Nov 2017	-		2.927	0.764	139.563	-
Software Development Support	Various	NAWC WD : China Lake, CA	152.642	10.533	Nov 2015	4.312	Nov 2016	0.000		-		0.000	0.000	167.487	-
Development Support	Various	NAWC AD : Patuxent River, MD	406.999	98.485	Nov 2015	41.726	Nov 2016	6.913	Nov 2017	-		6.913	0.000	554.123	-
Prior Year No Longer Funded in FYDP	Various	Various : Various	77.641	0.000		0.000		0.000		-		0.000	0.000	77.641	-
		Subtotal	1,138.124	146.394		67.132		10.670		-		10.670	0.764	1,363.084	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test and Evaluation	Various	NAWC WD : China Lake, CA	38.905	1.640	Nov 2015	2.712	Nov 2016	0.000		-		0.000	0.000	43.257	-
Developmental Test and Evaluation	Various	NAWC AD : Patuxent River, MD	668.838	83.330	Nov 2015	54.944	Nov 2016	4.400	Nov 2017	-		4.400	0.000	811.512	-
Developmental Test and Evaluation	Various	Edwards AFB : Edwards AFB, CA	618.609	65.334	Nov 2015	54.976	Nov 2016	4.400	Nov 2017	-		4.400	0.000	743.319	-
Developmental Test and Evaluation - Other (including Classified PIDs)	Various	Other (incl Classified PIDs) : Various	204.506	36.766	Nov 2015	30.602	Nov 2016	2.400	Nov 2017	-		2.400	0.000	274.274	-
Operational Test and Evaluation Support	Various	WEPS/Eglin : Various	27.829	0.000		0.000		0.000		-		0.000	0.000	27.829	-
Operational Test and Evaluation Support	Various	OT-AFOTEC/ AFFTC : Kirkland	179.619	24.926	Nov 2015	35.436	Nov 2016	41.976	Nov 2017	-		41.976	2.150	284.107	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800N / *JT Strike Fighter (JSF) - EMD*	Project (Number/Name) 2261 / *Joint Strike Fighter EMD*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		AFB, NM/Eglin AFB, FL													
Operational Test and Evaluation Support	Various	OT-JITC/OPTEC : Various	36.435	24.808	Nov 2015	42.956	Nov 2016	71.886	Nov 2017	-		71.886	2.143	178.228	-
Operational Test and Evaluation Support	Various	OT-CHLK : China Lake, CA	0.000	3.999	Nov 2015	9.912	Nov 2016	15.392	Nov 2017	-		15.392	0.000	29.303	-
Operational Test and Evaluation Support	Various	OT-Various : Various	0.105	7.718	Nov 2015	2.775	Nov 2016	3.274	Nov 2017	-		3.274	0.000	13.872	-
		Subtotal	1,774.846	248.521		234.313		143.728		-		143.728	4.293	2,405.701	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Security System High BOS	C/FP	Mantech : Arlington, VA	0.000	7.845	Dec 2015	8.037	Dec 2016	0.000		-		0.000	0.000	15.882	15.882
AFLCMC Civilian Pay	Various	AFLCMC CIVPAY : Wright Patterson, AFB, OH	94.833	25.478	Oct 2015	10.270	Oct 2016	0.000		-		0.000	0.000	130.581	-
Program Management Support	C/CPFF	Allutiiq : Arlington, VA	1.934	0.279	Dec 2015	0.192	Dec 2016	0.000		-		0.000	0.000	2.405	2.405
Facilities BOSS	WR	Various : Various	26.070	6.702	Dec 2015	9.013	Dec 2016	0.000		-		0.000	0.000	41.785	-
CIO ODCs	Various	Various : Various	9.058	3.963	Dec 2015	7.256	Dec 2016	0.000		-		0.000	0.000	20.277	-
Travel	Various	Various : Various	21.959	2.871	Oct 2015	2.343	Oct 2016	0.088	Dec 2017	-		0.088	0.000	27.261	-
Program Management Support	Various	Jacobs BOSS : Arlington, VA	26.012	24.428	Dec 2015	24.686	Dec 2016	0.000		-		0.000	0.000	75.126	-
OPS - Cost/FM/EV ACT-I	Various	OPS - Cost/FM/EV : Arlington, VA	2.000	0.000		3.845	Dec 2016	0.000		-		0.000	0.000	5.845	-
Program Management Support	Various	Andrews AFB : Camp Springs, MD	0.242	0.116	Dec 2015	0.135	Dec 2016	0.000		-		0.000	0.000	0.493	-
Prior Year No Longer Funded in FYDP	Various	Various : Various	593.944	0.000		0.000		0.000		-		0.000	0.000	593.944	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			776.052	71.682		65.777		0.088		-		0.088	0.000	913.599	-

Remarks

Cumulative Award Fee earned in prior years for Stanley is 99%.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals	47,503.136	1,462.496		1,436.879		527.873		-		527.873	205.576	51,135.960	-
Joint Strike Fighter 0604800F	-	497.031		403.505		255.745		-		255.745			-
Joint Strike Fighter 0604800M	-	495.428		507.078		141.534		-		141.534			-
International Partner	-	17.000		22.000		27.450		-		27.450			-
Project Cost Totals	47,503.136	453.037		504.296		103.144		-		103.144	205.576	51,135.960	-

Remarks

Subtotals and totals may not add due to rounding.

NOTE 1: Prior Years reflect $21,025.899M USAF/$18,858.842M USN/$2,671.382 USMC /$4,947.013 International/Total $47,503.136M
FY 2016 reflects $497.031M USAF/$453.037M USN/$495.428M USMC/$17.000M International/Total $1,462.496M
FY 2017 reflects $403.505M USAF/$504.296M USN/$507.078M USMC/$22.000M International/Total $1,436.879M
FY 2018 reflects $255.745M USAF/$103.144M USN/$141.534M USMC/$27.450M International/Total $ 527.873M

JSF EMD Includes:
USAF PE 0604800F BPAC 653831
USN PE 0604800N Project Unit 2261
USMC PE 0604800M Project Unit 2262

D&S Includes:
USAF PE 0604800F BPAC 653832
USN PE 0604800N Project Unit 3352
USMC PE 0604800M Project Unit 3350

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2261 / *Joint Strike Fighter EMD*

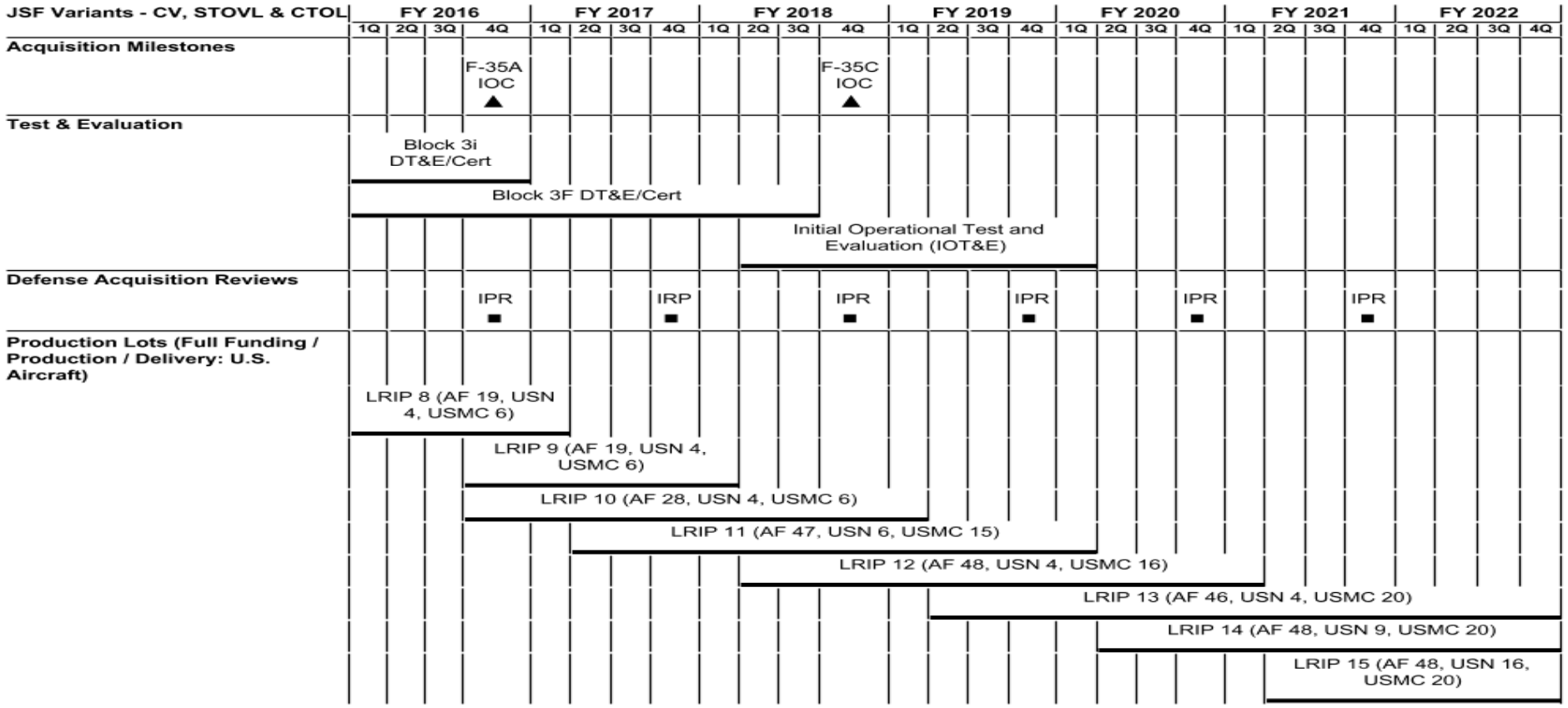

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
JSF Variants - CV, STOVL & CTOL				
Acquisition Milestones: F-35A Initial Operational Capability	4	2016	4	2016
Acquisition Milestones: F-35C Initial Operational Capability	4	2018	4	2018
Test & Evaluation: Test and Evaluation: Block 3i DT&E/Cert	1	2016	4	2016
Test & Evaluation: Test and Evaluation: Block 3F DT&E/Cert	1	2016	3	2018
Test & Evaluation: Test and Evaluation: Initial Operational Test and Evaluation (IOT&E)	2	2018	1	2020
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-16	4	2016	4	2016
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-17	4	2017	4	2017
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-18	4	2018	4	2018
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-19	4	2019	4	2019
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-20	4	2020	4	2020
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY-21	4	2021	4	2021
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 8 Full Funding / Production / Delivery	1	2016	1	2017
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 9 Full Funding / Production / Delivery	4	2016	1	2018
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 10 Full Funding / Production / Delivery	4	2016	1	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 2261 / *Joint Strike Fighter EMD*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 11 Full Funding / Production / Delivery	2	2017	1	2020
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 12 Full Funding / Production / Delivery	2	2018	1	2021
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 13 Full Funding / Production / Delivery	2	2019	4	2022
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 14 Full Funding / Production / Delivery	2	2020	4	2022
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 15 Full Funding / Production / Delivery	2	2021	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800N / *JT Strike Fighter (JSF) - EMD*	Project (Number/Name) 3352 / *F-35C Sustainment/Capability Enhancements*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3352: *F-35C Sustainment/ Capability Enhancements*	136.307	35.666	24.420	5.787	-	5.787	4.995	0.000	0.000	0.000	0.000	207.175
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Total cost including United States Navy (USN), United States Marine Corps (USMC), United States Air Force (USAF) and International Partner contributions funding is: FY16 $184.378M, FY17 $108.761M and FY18 $61.270M

R-2A table shown above reflect service funding only.

R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

D&S Includes:
USAF PE 64800F BPAC 653832
USN PE 0604800N Project Unit 3352
USMC PE 0604800M Project Unit 3350

A. Mission Description and Budget Item Justification

Funds enhancements to the deployability and suitability of the air system such as low observable (LO) maintenance enhancements, security architecture updates, redesign of obsolete items, and integrated training simulators. These enhancements will provide vital on-demand support to the war-fighter within a deployed environment and are not funded via the existing System Development and Demonstration (SDD) program or tied to Block 4 Operational Flight Program development. Funding will result in achieving targeted suitability, maintainability, and affordability returns employing the F-35 in deployed or austere locations.

-Funding at the accomplishment/planned program level is reported as the total of all services as these activities support all aircraft variants. By agreement, USN and USMC funding shares are approximately equal and when combined are equal to the USAF share.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Sustainment and Capability Enhancements	118.070	64.064	26.030	0.000	26.030
Articles:	-	-	-	-	-
Description: Apply disciplined systems engineering, refinement of requirements, develop and acquire					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3352 / *F-35C Sustainment/Capability Enhancements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
suitability and maintainability of the air system such as decentralized maintenance capabilities, LO maintenance enhancements, security architecture updates, redesign of obsolete items and integrated training simulators. ***FY 2016 Accomplishments:*** Continue to conduct systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements. Increase is to perform sustaining engineering, development and test activities necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare. This includes funding for suitability enhancements such as Standard Operating Unit Version 2 and Band 2/5 efforts. ***FY 2017 Plans:*** Continue to conduct systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements. Increase is to perform sustaining engineering, development and test activities necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare. This includes funding for suitability enhancements such as Standard Operating Unit Version 2 and Band 2/5 efforts. ***FY 2018 Base Plans:*** Continue to conduct systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements. Increase is to perform sustaining engineering, development and test activities necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare. This includes funding for suitability enhancements such as Standard Operating Unit Version 2 and Band 2/5 efforts. ***FY 2018 OCO Plans:*** N/A					
Title: Development Support ***Articles:*** ***Description:*** SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. ***FY 2016 Accomplishments:***	16.592 -	3.556 -	1.000 -	0.000 -	1.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3352 / *F-35C Sustainment/Capability Enhancements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to initiate development enhancement support for Deployable Autonomic Logistics Information System, decentralized maintenance capabilities, Low Observable maintenance enhancements, security architecture updates, redesign of obsolete items, and integrated training simulators. ***FY 2017 Plans:*** Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. Development Support decrease is due to across the board reduction between both services. ***FY 2018 Base Plans:*** Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. Development Support decrease is due to across the board reduction between both services. ***FY 2018 OCO Plans:*** N/A					
Title: Development Test and Evaluation	1.609	1.440	0.500	0.000	0.500
Articles:	-	-	-	-	-
Description: Verification and testing for deployability and suitability enhancements. ***FY 2016 Accomplishments:*** Continue to initiate government test and evaluaton of capability enhancements for Deployable Autonomic Logistics Information System, and LO maintenance enhancements. ***FY 2017 Plans:*** Continue to initiate government test and evaluaton of capability enhancements for Deployable Autonomic Logistics Information System, and LO maintenance enhancements. ***FY 2018 Base Plans:*** Continue to initiate government test and evaluaton of capability enhancements for Deployable Autonomic Logistics Information System, and LO maintenance enhancements. ***FY 2018 OCO Plans:*** N/A					
Title: Autonomic Logistics Information System	48.107	39.701	33.740	0.000	33.740

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3352 / *F-35C Sustainment/Capability Enhancements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
Description: SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2016 Accomplishments:*** SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2017 Plans:*** SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2018 Base Plans:*** SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	184.378	108.761	61.270	0.000	61.270
Joint Strike Fighter 0604800F	78.901	46.962	37.202	-	37.202
Joint Strike Fighter 0604800M 3350	30.819	24.348	11.400	-	11.400
International Partner	38.992	13.031	6.881	-	6.881
Navy Subtotals	35.666	24.420	5.787	0.000	5.787

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E/0604800F: *F-35A Joint Strike Fighter SDD*	497.031	403.505	255.745	-	255.745	69.655	7.796	5.598	0.000	0.000	22,265.229
• International: *International Partner (SDD)*	17.000	22.000	27.450	-	27.450	0.000	0.000	0.000	0.000	0.000	5,013.463

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800N / *JT Strike Fighter (JSF) - EMD*	Project (Number/Name) 3352 / *F-35C Sustainment/Capability Enhancements*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APAF/0207142F BP10: *F-35A USAF CTOL*	5,259.812	4,997.394	4,544.684	-	4,544.684	4,253.696	4,209.813	4,862.684	4,796.042	144,128.756	198,657.199
• RDT&E/0604800M/2262: *F-35B JT Strike Fighter (JSF) - EMD*	495.428	507.078	141.534	-	141.534	55.952	1.727	0.547	0.564	0.000	48,705.966
• APN/0605B: *F-35B Joint Strike Fighter STOVL Spares*	111.569	123.252	105.671	-	105.671	92.198	160.150	140.989	143.809	Continuing	Continuing
• APN/0605C: *F-35 Joint Strike Fighter CV Spares*	59.914	26.076	84.591	-	84.591	44.971	52.858	303.608	309.680	Continuing	Continuing
• MILCON 0207142F: *USAF MILCON Operations*	132.850	305.700	80.000	-	80.000	27.500	0.000	0.000	0.000	1,312.100	2,511.350
• APAF/0207142F BP11: *USAF Modification Funding*	70.167	175.811	68.270	-	68.270	230.448	279.814	259.978	301.899	Continuing	Continuing
• FOD/0207142F: *USAF Follow-on Development (FoD)*	47.023	127.302	299.408	-	299.408	463.321	474.971	396.488	263.548	Continuing	Continuing
• 0207142F/USAF BP16: *USAF Joint Strike Fighter Initial Spares*	229.582	362.792	320.831	-	320.831	319.151	416.722	399.361	394.654	3,893.112	7,567.519
• USAF/OPAF 0207142F: *USAF OPAF*	3.858	2.333	3.326	-	3.326	3.310	2.993	2.463	2.507	Continuing	Continuing
• APN/0592: *F-35B STOVL Series*	204.464	34.928	34.963	-	34.963	70.305	67.039	79.174	80.761	Continuing	Continuing
• APN/0593: *F-35C CV Series*	48.527	26.004	31.689	-	31.689	22.344	14.155	13.404	13.672	Continuing	Continuing
• RDT&E/0604800M/3350: *F-35B Sustainment/ Capability Enhancements*	30.819	24.348	11.400	-	11.400	0.000	0.000	0.000	0.000	0.000	202.874
• USAF SDD BP 653832: *Deployability and Suitability Enhancements*	78.901	46.962	37.202	-	37.202	0.000	0.000	0.000	0.000	0.000	238.599
• PAF/0207142F BP10: *F-35A CTOL Advance Procurement*	460.260	404.500	780.300	-	780.300	405.200	1,003.600	965.300	414.700	13,451.541	20,181.883
• DCA/0207142F 676011: *Dual Capable Aircraft (DCA)*	4.967	25.743	35.122	-	35.122	47.016	49.026	67.040	62.599	Continuing	Continuing
• APN/0147: *F-35C Joint Strike Fighter CV*	1,062.542	939.280	663.232	-	663.232	1,302.363	2,016.259	2,835.305	2,992.701	30,639.555	55,785.279

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3352 / *F-35C Sustainment/Capability Enhancements*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0152C: *F-35B Joint Strike Fighter STOVL AP*	203.060	233.648	413.450	-	413.450	228.492	231.802	220.822	225.245	1,959.119	4,802.154
• APN/0152: *F-35B Joint Strike Fighter STOVL*	2,291.599	2,243.741	2,631.787	-	2,631.787	2,660.443	2,723.935	2,816.841	2,821.572	22,732.766	47,011.821
• DoN MILCON: *DoN JSF MILCON*	94.420	230.900	64.660	-	64.660	121.990	119.800	0.000	0.000	642.400	1,406.074
• International 2: *International Procduction/Reprogramming Lab*	189.922	185.641	124.114	-	124.114	151.776	150.588	149.848	87.119	Continuing	Continuing
• OPN/4268: *Logistics Information System (ALIS)*	48.773	39.099	34.032	29.245	63.277	32.742	46.073	47.389	62.299	Continuing	Continuing
• MC/0207597F: *USAF MILCON Training*	65.400	20.000	21.000	-	21.000	34.000	15.900	0.000	0.000	0.000	156.300
• International 3: *International FoM/D&S*	83.595	84.602	158.273	-	158.273	159.649	162.023	167.383	160.111	Continuing	Continuing
• OPN 902010 S8JC: *Aviation Support Equipment (ALIS)*	2.946	0.881	2.297	-	2.297	2.321	0.139	1.977	0.000	Continuing	Continuing
• USAF O&M: *USAF O&M*	312.557	425.978	452.906	-	452.906	555.687	873.270	998.979	958.708	Continuing	Continuing
• USAF MILCON 0502635F: *USAF MILCON Air National Guard*	0.000	15.100	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	15.100
• USN 2936: *F-35C Follow-on Development (CV)*	20.544	63.387	139.942	-	139.942	224.712	228.707	188.678	120.192	Continuing	Continuing
• International Unique: *Imtl Unique (SDD/PSFD)*	38.483	32.374	15.566	-	15.566	0.000	0.000	0.000	0.000	0.000	482.417

Remarks

D. Acquisition Strategy

Implement Joint Strike Fighter Joint Executive Steering Board/Configuration Steering Board approved enhancements through existing contracts using the engineering change proposal process. When appropriate, new cost type contracts may be established.

E. Performance Metrics

The following are the key performance parameters from the F-35 Selected Acquisition Report:

Performance Metrics reflect Key Program Performance data.

Combat Radius
F-35A Meets/Exceeds Tripwire Requirement
F-35B Meets/Exceeds Tripwire Requirement
F-35C Meets/Exceeds Tripwire Requirement

F-35B Performance
Flat Deck (High-High-High Profile Fuel) Meets Requirement In Tripwire Band
Ski Jump (High-Medium-Medium-High Profile Fuel) Meets Requirement In Tripwire Band
Vertical Landing Bring Back Meets Requirement In Tripwire Band

F-35C Recovery
Maximum Approach Speed Meets Requirement In Tripwire Band

Interoperability
Net Ready Criteria- Meets Requirement In Tripwire Band

Radio Frequency Signature Meets/Exceeds Tripwire Requirement

Force Protection
CB Pilot Protection (New Key Performance Parameters Per CN3) - Meets/Exceeds Tripwire Requirement

Mission Reliability
F-35A Meets/Exceeds Tripwire Requirement
F-35B United States Marine Corps (USMC) Meets/Exceeds Tripwire Requirement
F-35B United Kingdom (UK) Meets/Exceeds Tripwire Requirement
F-35C Exceeds Operational Requiremets Document Objective

Sortie Generation Rate
F-35A Meets/Exceeds Tripwire Requirement
F-35B USMC Meets/Exceeds Tripwire Requirement
F-35B UK Meets/Exceeds Tripwire Requirement
F-35C Meets/Exceeds Tripwire Requirement

Logistics Footprints

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3352 / *F-35C Sustainment/Capability Enhancements*

F-35A Meets/Exceeds Tripwire Requirement
F-35B USMC Meets/Exceeds Tripwire Requirement

Logistics Footprint- Volume
F-35B USMC Exceeds ORD Objective
F-35B UK Meets/Exceeds Tripwire Requirement
F-35C Exceeds Operational Requirements Document (ORD) Objective

Logistics Footprint-Weight
F-35B USMC Exceeds ORD Objective
F-35B UK Meets/Exceeds Tripwire Requirement
F-35C Exceeds ORD Objective

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800N / *JT Strike Fighter (JSF) - EMD*	Project (Number/Name) 3352 / *F-35C Sustainment/Capability Enhancements*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development - 3002 SDD	C/CPFF	Lockheed Martin : Fort Worth, TX	0.000	41.330	Mar 2016	35.844	Mar 2017	23.655	Mar 2018	-		23.655	4.995	105.824	105.824
Primary Hardware Development - 3002 ALIS	C/CPFF	Lockheed Martin : Fort Worth, TX	87.723	48.107	Mar 2016	39.701	Mar 2017	33.740	Mar 2018	-		33.740	0.000	209.271	209.271
Primary Hardware Development -14-C-002 Band 2/5	C/CPFF	Lockheed Martin : Fort Worth, TX	15.590	76.740	Mar 2016	28.220	Mar 2017	2.375	Mar 2018	-		2.375	0.000	122.925	122.925
		Subtotal	103.313	166.177		103.765		59.770		-		59.770	4.995	438.020	438.020

Remarks

Cumulative Award Fee earned for Lockheed Martin 0%.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various	AFLCMC : Eglin AFB	19.720	13.781	Mar 2016	0.000		0.000		-		0.000	0.000	33.501	-
Development Support	Various	Various : Various	11.668	0.700	Mar 2016	2.410	Mar 2017	1.000	Mar 2018	-		1.000	0.000	15.778	-
		Subtotal	31.388	14.481		2.410		1.000		-		1.000	0.000	49.279	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	Various : Various	0.606	1.404	Mar 2016	0.976	Mar 2017	0.500	Mar 2018	-		0.500	0.000	3.486	-
		Subtotal	0.606	1.404		0.976		0.500		-		0.500	0.000	3.486	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604800N / *JT Strike Fighter (JSF) - EMD*	Project (Number/Name) 3352 / *F-35C Sustainment/Capability Enhancements*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Support	Various	Various : Various	1.000	2.316	Mar 2016	1.610	Mar 2017	0.000		-		0.000	0.000	4.926	-
		Subtotal	1.000	2.316		1.610		0.000		-		0.000	0.000	4.926	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals	136.307	184.378		108.761		61.270		-		61.270	4.995	495.711	-
Joint Strike Fighter 0604800F	-	78.901		46.962		37.202		-		37.202			-
Joint Strike Fighter 0604800M 3350	-	30.819		24.348		11.400		-		11.400			-
International Partner	-	38.992		13.031		6.881		-		6.881			-
Project Cost Totals	136.307	35.666		24.420		5.787		-		5.787	4.995	495.711	-

Remarks

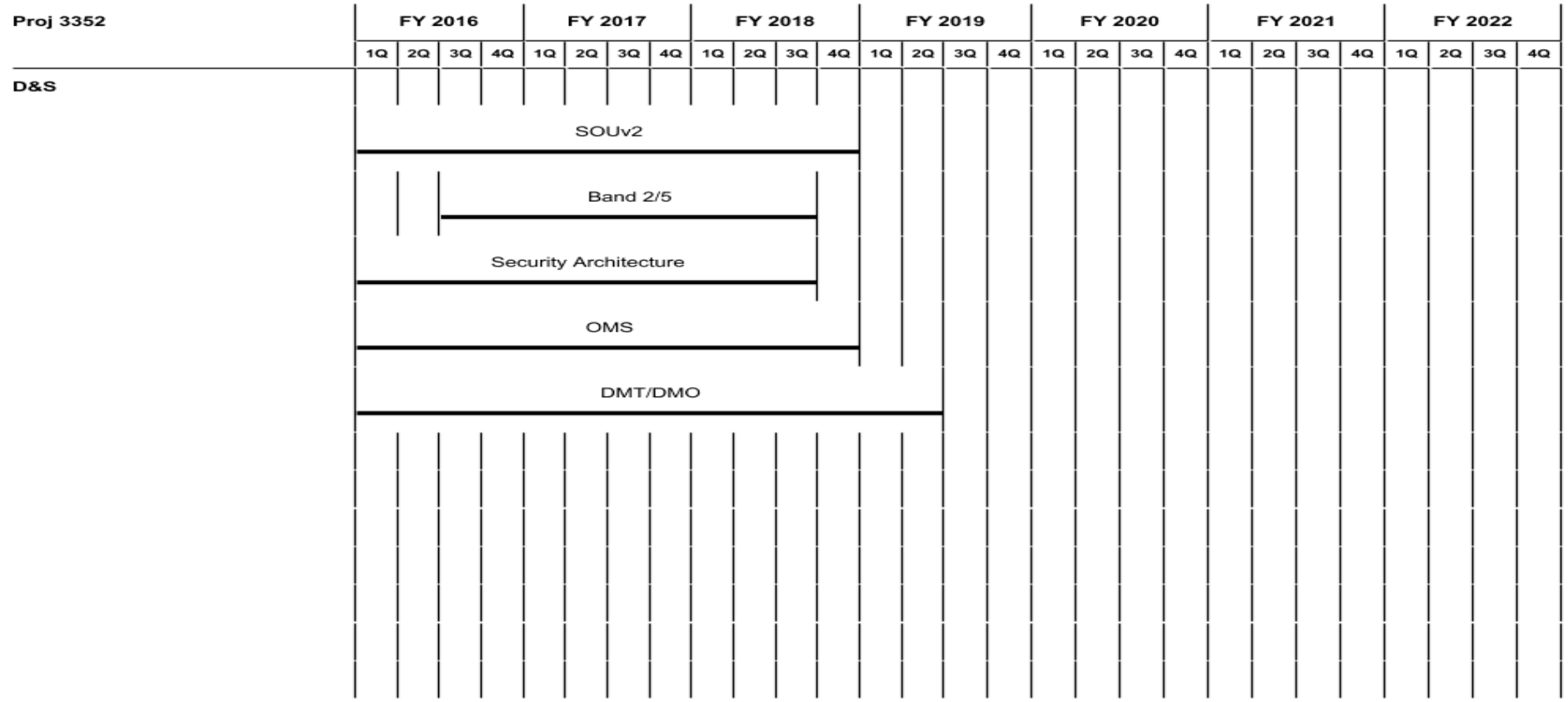
NOTE: Prior Years reflect $75.534M USAF/$32.852M USN/$27.921M USMC/$0.000M International/Total $136.307M
FY 2016 reflects $78.901M USAF/$35.666M USN/$30.819M USMC/$38.992M International/Total $184.378M
FY 2017 reflects $46.962M USAF/$24.420M USN/$24.348M USMC/$13.031M International/Total $108.761M
FY 2018 reflects $37.202M USAF/$ 5.787M USN/$11.400M USMC/$ 6.881M International/Total $ 61.270M

R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

JSF EMD Includes:
USAF PE 0604800F BPAC 653831
USN PE 0604800N Project Unit 2261
USMC PE 0604800M Project Unit 2262

D&S Includes:
USAF PE 0604800F BPAC 653832
USN PE 0604800N Project Unit 3352
USMC PE 0604800M Project Unit 3350

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3352 / *F-35C Sustainment/Capability Enhancements*



2018OSD - 0604800N - 3352

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604800N / *JT Strike Fighter (JSF) - EMD*	**Project (Number/Name)** 3352 / *F-35C Sustainment/Capability Enhancements*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3352				
D&S: Standard Operating Unit (SOUv2)	1	2016	4	2018
D&S: Band 2/5	3	2016	3	2018
D&S: Security Architecture	1	2016	3	2018
D&S: Offboard Misson Support (OMS) Redesign	1	2016	4	2018
D&S: Distributed Mission Training/Distributed Mission Operations (DMT/DMO)	1	2016	2	2019

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604810M *I (U)Joint Strike Fighter Follow On Mod (FoM) - MC*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	65.045	20.157	74.227	144.958	-	144.958	226.310	230.383	190.442	123.531	Continuing	Continuing
2935: *JSF Follow On Modernization - Marine Corps*	65.045	20.157	74.227	144.958	-	144.958	226.310	230.383	190.442	123.531	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 198												

A. Mission Description and Budget Item Justification

The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike aircraft for the United States Navy, United States Air Force, United States Marine Corps and International Partners countries. There are three variants the F-35A Conventional Takeoff and Landing variant; F-35B Short Take Off and Vertical Landing; and the F-35C Aircraft Carrier suitable variant. Maximum commonality among the variants, consistent with National Disclosure Policy, will minimize total air system life cycle costs. Planning and pre-development systems engineering for the FOM continues as Initial Operational Capability (IOC) is met for each variant during System Development and Demonstration (SDD).

The JSF FoM efforts provide incremental warfighting capability improvements to maintain joint air dominance against evolving threats. FoM capability requirements were initiated through ongoing Service-led operational analysis of warfighting gaps identified in the Fifth Generation Fighter Modernization Initial Capabilities Document (ICD), and through F-35 JSF FoM Mission Decomposition analysis completed in FY2014. These analyses serve as the basis for the F-35 FoM Capabilities Development Document (CDD), staffed through the Air Force Requirements Oversight Council (AFROC) and signed by the USAF Chief of Staff in January 2015. Joint Requirements Oversight Council (JROC) approved the CDD 21 March 2017. Pre-modernization activities in FY2017 and FY2018 include systems engineering, risk reduction, and infrastructure upgrades to support initial fleet availability of FoM upgrades in FY2021.

FoM efforts designated as Block 4 include a robust weapons integration portfolio and provide new opportunities for International Partners to assess, integrate, and field unique capabilities based on global sovereign requirements.

The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark and Norway are participants in F-35 modernization. The program shown here reflects United States Marine Corps funding. Total funding for all Service and International Partners is reported at the accomplishment/planned program level since activities support all aircraft variants. Foreign Military Sales are ongoing separately.

Note:
FY 2017 and prior PE was titled (U)Joint Strike Fighter Follow On Develop - MC.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604810M *I (U)Joint Strike Fighter Follow On Mod (FoM) - MC*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	20.798	74.227	154.047	-	154.047
Current President's Budget	20.157	74.227	144.958	-	144.958
Total Adjustments	-0.641	0.000	-9.089	-	-9.089
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.641	0.000			
• Program Adjustments	0.000	0.000	-10.050	-	-10.050
• Rate/Misc Adjustments	0.000	0.000	0.961	-	0.961

Change Summary Explanation

Adjusted R-4 schedule as follows:
Requirements: Final CCD (JROC) changed from 3rd Quarter FY16 to 3rd Quarter FY17
Systems Engineering: Updated to show Block 4.1 SRR and 4.1 & 4.2 PDR dates
Test & Evaluation: 4.1 Test changed from 3QFY19-3QFY20 to 4QFY19-4QFY20
Test & Evaluation: 4.2 Test changed from 1QFY21-4QFY21 to 2QFY21-4QFY22
Fielding: Added Block 4.2 Fleet Availability 4QFY22

Program Changes:
FY2018 Decrease: -$9.089M decrease in FY18 funding re-phased to align with projected work and execution.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604810M / *(U)Joint Strike Fighter Follow On Mod (FoM) - MC*	Project (Number/Name) 2935 / *JSF Follow On Modernization - Marine Corps*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2935: *JSF Follow On Modernization - Marine Corps*	65.045	20.157	74.227	144.958	-	144.958	226.310	230.383	190.442	123.531	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Total cost, including International partner contributions, USN, USMC, and USAF funding: FY2016 $110.517M; FY2017 $373.463M; FY2018 $739.755M

R-2A table shown above reflects service funding only.

R-2A (section B)/R-3 displays combined program for JSF Follow-on Modernization (FoM).

JSF FoM Includes:
USAF PE 0207142F BPAC 675346
USN PE 0604810N Project Unit 2936
USMC PE 0604810M Project Unit 2935
USN PE 0604800N Project Unit 9999 (FY14): $1.500M
USMC PE 0604800M Project Unit 9999 (FY14): $1.500M
International Partner Contributions

A. Mission Description and Budget Item Justification

F-35 FoM provides continuing incremental upgrades of the three F-35 variants and associated ground equipment. Upgrades are essential mission improvements for Air Interdiction and Strategic Attack, Close Air Support, Suppression and Destruction of Enemy Air Defenses, Offensive and Defensive Counter Air and expanded Surface Warfare. The Block 4 acquisition strategy is based upon incremental deliveries of capabilities in 4 sub-blocks. The strategy includes deliveries on a two year cycle with a focus on hardware and tech refresh change every four years. FoM capability planning includes an efficient transition from F-35 SDD to Follow-on Modernization. As SDD development activities ramp down FoM will assume responsibility for improvements and modernization efforts. Block 4 capability planning includes sub-block 4.1 through 4.4 modernization efforts with initial increment of capability available in FY2021 and subsequent releases every two years.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development - Block 4 Planning and Systems Engineering	85.478	265.280	311.270	0.000	311.270
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810M / *(U)Joint Strike Fighter Follow On Mod (FoM) - MC*	**Project (Number/Name)** 2935 / *JSF Follow On Modernization - Marine Corps*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Block 4 Planning and Systems Engineering preliminarily design and delta SRR for all variants of the F-35 Aircraft. This is a continuation of the previous Block 4 Requirements Decomposition effort which will include activities leading up to a successful System Functional Review (SFR) and select facility upgrades required for Block 4 research, development, test and evaluation. Included in Block 4 are upgraded capabilities and continuous improvements to maintain Air System viability against evolving threats indicated in the Electronic Warfare Initial Capabilities Document (ICD), the Fifth Generation Fighter Modernization ICD, and the FoM Capability Development Document (CDD), reduce life cycle cost, and improve operational suitability. Expected completion of a Block 4.1 Preliminary Design Review (PDR) and a Block 4.2 System Requirements Review (SRR) will address additional Block 4 capabilities requirements. Post-PDR risk reduction and pre-planning for subsequent Block 4 Modernization events are included. Capability planning effort and preparations will lead to formal acquisition approval of a Block 4 Modernization contract. ***FY 2016 Accomplishments:*** Continued FoM requirements analysis and technical requirements development and decomposition, systems engineering, and technical planning. ***FY 2017 Plans:*** Continue requirements analysis and technical requirements development and decomposition, systems engineering, and technical planning. Conduct Block 4.1 System Requirements Review (SRR). ***FY 2018 Base Plans:*** Conduct a Block 4.1 System Functional Review (SFR) followed by initiation of preliminary design. Release the Block 4 modernization Request for Proposal (RFP) 1QFY2018 with contract award planned for 1QFY2019. ***FY 2018 OCO Plans:*** N/A					
Title: Product Development - Technology Refresh 3 (TR-3)	14.214	32.515	150.370	0.000	150.370
Articles:	-	-	-	-	-
Description: Technology Refresh 3 (TR-3) Design Competition, Development, Integration, and Test. This is the design phase of TR-3 program fully supports Block 3F functionality and allows incorporation of all Block 4 capabilities documented in the System Requirements Document (SRD). TR-3 hardware redesign is required to support 4X processing growth factor based on the current processing estimates for all 3F capabilities. Redesign of TR-3 subsystems (Integrated Core Processor (ICP), Aircraft Memory System (AMS), and Panoramic Cockpit					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810M / *(U)Joint Strike Fighter Follow On Mod (FoM) - MC*	**Project (Number/Name)** 2935 / *JSF Follow On Modernization - Marine Corps*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Display (PCD)) configurations will contain new backplane technology, commercial operating systems, and modified middleware necessary to take the design of the TR-3 System through Critical Design Review (CDR). ***FY 2016 Accomplishments:*** TR-3 Program produced 5 government-owned specifications to inform the new F-35 avionics hardware redesign required to support 4X processing growth factor based on current processing estimates for all 3F capabilities. The program also started the design of the new Integrated Core Processor (ICP), Panoramic Cockpit Display (PCD), and Aircraft Memory System (AMS). ***FY 2017 Plans:*** The TR-3 program continued to design the Integrated Core Processor (ICP), Panoramic Cockpit Display (PCD), and Aircraft Memory System (AMS). The program will hold System Requirements Review and Preliminary Design Review for the ICP, PCD, and AMS to ensure on-time Critical Design Review, which drives timely first article delivery to the production line in FY23. ***FY 2018 Base Plans:*** The TR-3 program will continue design toward Critical Design Review of the Integrated Core Processor (ICP), Panoramic Cockpit Display (PCD), and Aircraft Memory System (AMS). In addition the TR-3 program will prototype the middleware software that will enable F-35's new messaging architecture delivered as part of TR-3 and ensure compatibility with current F-35 sensors. Additionally the initial lab stand up will occur to ensure timely first article delivery to the production line in FY23. ***FY 2018 OCO Plans:*** N/A					
Title: Infrastructure and Support Costs	10.825	70.668	114.115	0.000	114.115
Articles:	-	-	-	-	-
Description: Funding will support infrastructure investment planning and other test planning activities required for Block 4 development, integration, test and evaluation. Funding related to the Integrated Test Force, government, and contractor labor. Other costs in support of ranges, chase planes and DT site operations. ***FY 2016 Accomplishments:*** Continue development support for defining, managing and acquiring the F-35 capability enhancements identified in approved requirements documents. ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810M / *(U)Joint Strike Fighter Follow On Mod (FoM) - MC*	**Project (Number/Name)** 2935 / *JSF Follow On Modernization - Marine Corps*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue development support for defining, managing and acquiring the F-35 capability enhancements identified in approved requirements documents. ***FY 2018 Base Plans:*** Continue development support for defining, managing and acquiring the F-35 capability enhancements identified in approved requirements documents. Transfer of integrated test force requirement to FoM F-35 SDD draws to closure. ***FY 2018 OCO Plans:*** N/A					
Title: Test and Evaluation ***Articles:*** ***Description:*** Non-recurring engineering required to plan for the service life extension of existing DT aircraft and modification necessary to bring DT aircraft fleet to a common configuration. Additional upgrades required to support development and evaluation of improvements driven by changes in the threat environment and as identified in the Electronic Warfare ICD, the Fifth Generation Fighter Modernization ICS, and the FoM Capability Development Document (CDD). Execution all DT activities in support of Block 4. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Award initial contract in support of the non-recurring engineering effort. ***FY 2018 Base Plans:*** Funding will support investment planning and prioritization required to maintain future development capability. This funding supports the non-recurring engineering (NRE) for capability upgrades and service life extension modifications to include engine, structural and mission systems updates to maintain the viability of DT fleet for FoM efforts. This funding also supports laboratory upgrades required to support development and verification of capabilities in a relevant environment. ***FY 2018 OCO Plans:*** N/A	0.000 -	5.000 -	164.000 -	0.000 -	164.000 -
Accomplishments/Planned Programs Subtotals	110.517	373.463	739.755	0.000	739.755

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810M / *(U)Joint Strike Fighter Follow On Mod (FoM) - MC*	**Project (Number/Name)** 2935 / *JSF Follow On Modernization - Marine Corps*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
0207142F JSF Follow on Modernization	47.023	127.302	299.832	-	299.832
International Follow on Modernization	22.793	108.547	151.110	-	151.110
0604810N JSF Follow on Modernization	20.544	63.387	143.855	-	143.855
Navy Subtotals	20.157	74.227	144.958	0.000	144.958

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E/0604810N/2936: *F-35C Follow-on Modernization*	20.544	63.387	143.855	-	143.855	225.442	229.055	189.104	121.613	Continuing	Continuing
• USAF/FOD/0207142F: *USAF Follow-on Modernization*	47.023	127.302	299.832	-	299.832	463.321	474.971	396.488	263.548	Continuing	Continuing
• International: *International Follow-on Modernization*	22.793	108.547	151.110	-	151.110	161.934	165.007	83.372	160.473	Continuing	Continuing

Remarks

This is a joint program with no executive service. Service Acquisition Executive (SAE) authority alternates between the Department of the Navy and the Department of the Air Force and currently resides with the Navy. Program Element 0604800N/0604800M continues USN development efforts budgeted in 0603800N prior to FY2002. The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, and Norway are participants in the SDD phase of JSF.

D. Acquisition Strategy

The FoM acquisition strategy is to employ both Cost and Fixed Price Incentive contracts for the Block 4 engineering and development efforts. A new modernization contract structure will be established for all post SDD Block 4 efforts. In addition, a separate Basic Ordering Agreement or Indefinite Quantity/Indefinite Delivery contract is planned to provide a long term approach to upgrading and maintaining laboratories and test aircraft and supporting technology maturation for future FoM capabilities.

E. Performance Metrics

Overall FoM Performance Metrics will reflect Key Performance Parameters established in the F-35 FoM Capability Development Document.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604810M / *(U)Joint Strike Fighter Follow On Mod (FoM) - MC*	Project (Number/Name) 2935 / *JSF Follow On Modernization - Marine Corps*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prime LM 02-C-3002	C/CPFF	Lockheed Martin : FT. Worth, TX	19.485	3.707	Dec 2015	0.000		0.000		-		0.000	23.192	46.384	46.384
Prime LM 16-C-0008	C/CPFF	Lockheed Martin : FT. Worth, TX	38.868	80.299	Dec 2015	39.853	Dec 2016	0.000		-		0.000	86.812	245.832	245.832
Prime LM 14-G-0020(TR3)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	14.214	Mar 2017	32.515	Mar 2017	150.370	Dec 2017	-		150.370	466.040	663.139	663.139
Prime LM TBD(Phase II)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		171.760	Dec 2017	130.370	Dec 2017	-		130.370	657.019	959.149	959.149
Prime LM BOA 0020 (Nimble Lightning + Pilot Training)	C/CPFF	Lockheed Martin : FT Worth, TX	0.000	1.206	Dec 2015	0.000		0.000		-		0.000	5.470	6.676	6.676
Prime LM TBD (Modernization)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		40.297	Dec 2017	115.900	Dec 2017	-		115.900	1,878.246	2,034.443	2,034.443
Prime LM Flight Test Asset	C/BA	Lockheeed Martin : FT. Worth, TX	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Prime LM IDIQ TBD (ECASE)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		0.000		65.000	Dec 2017	-		65.000	0.000	65.000	65.000
Systems Engineering	C/CPFF	Various : Various	0.000	0.266	Dec 2015	13.370	Dec 2016	0.000		-		0.000	84.010	97.646	97.646
		Subtotal	58.353	99.692		297.795		461.640		-		461.640	3,200.789	4,118.269	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NAWCAD : Patuxent River, MD	0.400	7.503	Dec 2015	20.970	Dec 2016	15.496	Dec 2017	-		15.496	138.721	183.090	188.090
Development Support	WR	NAWCWD : China Lake, CA	0.000	0.429	Dec 2015	7.383	Dec 2016	4.808	Dec 2017	-		4.808	Continuing	Continuing	Continuing
Development Support	Various	Edwards AFB : Edwards AFB, CA	0.000	0.986	Dec 2015	0.000		2.200	Dec 2017	-		2.200	11.380	14.566	14.566
Development Support	Various	Eglin : Various	0.015	0.000		1.940	Dec 2016	3.220	Dec 2017	-		3.220	18.882	24.057	24.057

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604810M / *(U)Joint Strike Fighter Follow On Mod (FoM) - MC*	Project (Number/Name) 2935 / *JSF Follow On Modernization - Marine Corps*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various	Various : Various	6.277	1.626	Dec 2015	8.714	Dec 2016	8.215	Dec 2017	-		8.215	68.103	92.935	92.935
Development Support	MIPR	AFLCMC : Wrigth Patterson AFB	0.000	0.281	Dec 2015	0.232	Dec 2016	0.464	Dec 2017	-		0.464	3.037	4.014	4.014
Development Support Engine	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	6.692	10.825		39.239		34.403		-		34.403	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		10.478	Dec 2017	-		10.478	174.872	185.350	185.350
Developmental Test & Evaluation	WR	NAWCWD : China Lake , CA	0.000	0.000		0.000		1.050	Dec 2017	-		1.050	24.396	25.446	25.446
Developmental Test & Evaluation Edwards/AFB	Various	Edwards AFB : Edwards AFB, CA	0.000	0.000		0.000		12.471	Dec 2017	-		12.471	289.067	301.538	301.538
Developmental Test & Evaluation	Various	Various : Various	0.000	0.000		0.000		6.001	Dec 2017	-		6.001	57.087	63.088	63.088
Developmental Test Aircraft Viability	C/CPFF	Lockheed Martin : FT.Worth, TX	0.000	0.000		5.000	Dec 2017	134.000	Dec 2017	-		134.000	0.000	139.000	139.000
		Subtotal	0.000	0.000		5.000		164.000		-		164.000	545.422	714.422	714.422

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Functional Wyle	C/CPFF	Wyle : Arlington, VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
AFLCMC Civilian Pay	Various	AFLCMC CIVPAY : Wright Patterson, AFB	0.000	0.000		30.550	Nov 2016	40.000	Nov 2017	-		40.000	231.610	302.160	302.160

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810M / *(U)Joint Strike Fighter Follow On Mod (FoM) - MC*	**Project (Number/Name)** 2935 / *JSF Follow On Modernization - Marine Corps*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Financial Mgmt Database Support IDS	Various	Various : Various	0.000	0.000		0.760	Nov 2016	0.800	Nov 2017	-		0.800	4.301	5.861	5.861
Earned Value/Finance/ Cost ACT-I	Various	Various : Various	0.000	0.000		0.000		3.178	Nov 2017	-		3.178	23.518	26.696	26.696
CIO BOS	Various	Various : Various	0.000	0.000		0.000		20.000	Nov 2017	-		20.000	95.066	115.066	115.066
Systems System High BOS	Various	Various : Various	0.000	0.000		0.000		9.336	Nov 2017	-		9.336	45.342	54.678	54.678
Other CIO Services	Various	Various : Various	0.000	0.000		0.000		4.739	Nov 2017	-		4.739	22.579	27.318	27.318
Travel	Various	Various : Various	0.000	0.000		0.119	Nov 2016	1.659	Nov 2017	-		1.659	8.569	10.347	10.347
Security Mantech	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	0.000	0.000		31.429		79.712		-		79.712	430.985	542.126	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals	65.045	110.517		373.463		739.755		-		739.755	-	-	-
0207142F JSF Follow on Modernization	-	47.023		127.302		299.832		-		299.832			-
International Follow on Modernization	-	22.793		108.547		151.110		-		151.110			-
0604810N JSF Follow on Modernization	-	20.544		63.387		143.855		-		143.855			-
Project Cost Totals	65.045	20.157		74.227		144.958		-		144.958	0.000	0.000	-

Remarks

Subtotals and totals may not add due to rounding.

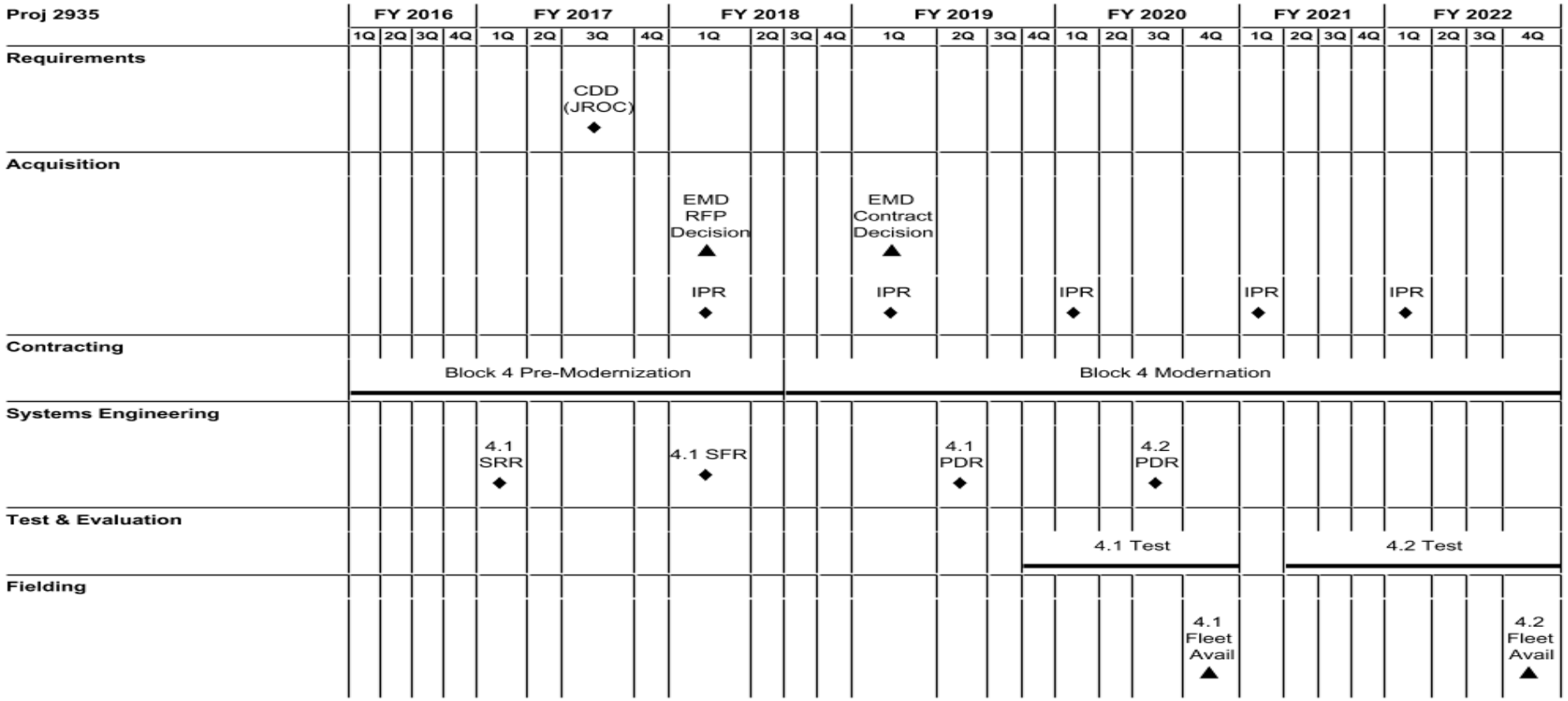
Prior Year reflects $26.660M USAF/$11.802M USN/$11.586M USMC/$14.997M International/Total $65.045M
FY 2016 reflects $47.023M USAF/$20.544M USN/$20.157M USMC/$22.793M International/Total $110.517M
FY 2017 reflects $127.302M USAF/$ 63.387M USN/$74.227M USMC/$108.547M International/Total $373.463M
FY 2018 reflects $299.832M USAF/$143.855M USN/$144.958M USMC/$151.110M International/Total $739.755M

R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604810M / *(U)Joint Strike Fighter Follow On Mod (FoM) - MC*	Project (Number/Name) 2935 / *JSF Follow On Modernization - Marine Corps*	

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
JSF Follow on Modernization (FoM) Includes: USAF PE 0207142F BPAC 675346 USN PE 0604810N Project Unit 2936 USMC PE 0604810M Project Unit 2935 USN PE 0604800N Project Unit 9999 (FY14): $1.500 USMC PE 0604800M Project Unit 999 (FY14) : $1.500									

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810M / *(U)Joint Strike Fighter Follow On Mod (FoM) - MC*	**Project (Number/Name)** 2935 / *JSF Follow On Modernization - Marine Corps*



2018PB - 0604810M - 2935

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810M / *(U)Joint Strike Fighter Follow On Mod (FoM) - MC*	**Project (Number/Name)** 2935 / *JSF Follow On Modernization - Marine Corps*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2935				
Requirements: Final CDD (JROC)	3	2017	3	2017
Acquisition: Modernization RFP Decision	1	2018	1	2018
Acquisition: Modernization Contract Decision	1	2019	1	2019
Acquisition: Interim Program Review (IPR) FY18	1	2018	1	2018
Acquisition: Interim Program Review (IPR) FY19	1	2019	1	2019
Acquisition: Interim Program Review (IPR) FY20	1	2020	1	2020
Acquisition: Interim Program Review (IPR) FY21	1	2021	1	2021
Acquisition: Interim Program Review (IPR) FY22	1	2022	1	2022
Contracting: Block 4 Pre-Modernization	1	2016	2	2018
Contracting: Block 4 Modernization	3	2018	4	2022
Systems Engineering: 4.1 Preliminary Design Review (PDR)	2	2019	2	2019
Systems Engineering: 4.2 Preliminary Design Review (PDR)	3	2020	3	2020
Systems Engineering: 4.1 System Requirements Review (SRR)	1	2017	1	2017
Systems Engineering: 4.1 System Functional Review (SFR)	1	2018	1	2018
Test & Evaluation: Test & Evaluation: 4.1 Test	4	2019	4	2020
Test & Evaluation: Test & Evaluation: 4.2 Test	2	2021	4	2022
Fielding: Block 4.1 Fleet Availability	4	2020	4	2020
Fielding: Block 4.2 Fleet Availability	4	2022	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604810N *I (U)Joint Strike Fighter Follow On Mod (FoM) - Navy*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	65.045	20.544	63.387	143.855	-	143.855	225.442	229.055	189.104	121.613	Continuing	Continuing
2936: *JSF Follow On Modernization - Navy*	65.045	20.544	63.387	143.855	-	143.855	225.442	229.055	189.104	121.613	Continuing	Continuing

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 198

A. Mission Description and Budget Item Justification

The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike aircraft for the United States Navy, United States Air Force, United States Marine Corps and International Partners countries. There are three variants the F-35A Conventional Takeoff and Landing variant; F-35B Short Take Off and Vertical Landing; and the F-35C Aircraft Carrier suitable variant. Maximum commonality among the variants, consistent with National Disclosure Policy, will minimize total air system life cycle costs. Planning and pre-development systems engineering for the FOM continues as Initial Operational Capability (IOC) is met for each variant during System Development and Demonstration (SDD).

The JSF FoM efforts provide incremental warfighting capability improvements to maintain joint air dominance against evolving threats. FoM capability requirements were initiated through ongoing Service-led operational analysis of warfighting gaps identified in the Fifth Generation Fighter Modernization Initial Capabilities Document (ICD), and through F-35 JSF FoM Mission Decomposition analysis completed in FY2014. These analyses serve as the basis for the F-35 FoM Capabilities Development Document (CDD), staffed through the Air Force Requirements Oversight Council (AFROC) and signed by the USAF Chief of Staff in January 2015. Joint Requirements Oversight Council (JROC) approved the CDD 21 March 2017. Pre-modernization activities in FY2017 and FY2018 include systems engineering, risk reduction, and infrastructure upgrades to support initial fleet availability of FoM upgrades in FY2021.

FoM efforts designated as Block 4 include a robust weapons integration portfolio and provide new opportunities for International Partners to assess, integrate, and field unique capabilities based on global sovereign requirements.

The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark and Norway are participants in F-35 modernization. The program shown here reflects United States Marine Corps funding. Total funding for all Service and International Partners is reported at the accomplishment/planned program level since activities support all aircraft variants. Foreign Military Sales are ongoing separately.

Note:
FY 2017 and prior year PE was titled (U)Joint Strike Fighter Follow On Develop - Navy

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604810N *I (U)Joint Strike Fighter Follow On Mod (FoM) - Navy*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	21.200	63.387	133.686	-	133.686
Current President's Budget	20.544	63.387	143.855	-	143.855
Total Adjustments	-0.656	0.000	10.169	-	10.169
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.656	0.000			
• Program Adjustments	0.000	0.000	10.114	-	10.114
• Rate/Misc Adjustments	0.000	0.000	0.055	-	0.055

Change Summary Explanation

Adjusted R-4 schedule as follows:
Requirements: Final CCD (JROC) changed from 3rd Quarter FY16 to 3rd Quarter FY17
Systems Engineering: Updated to show Block 4.1 SRR and 4.1 & 4.2 PDR dates
Test & Evaluation: 4.1 Test changed from 3QFY19-3QFY20 to 4QFY19-4QFY20
Test & Evaluation: 4.2 Test changed from 1QFY21-4QFY21 to 2QFY21-4QFY22
Fielding: Added Block 4.2 Fleet Availability 4QFY22

Program Changes:
FY2018 Increase: $10.169M net increase in FY 18 including $10.300M increase to fund Tech Refresh (TR)-3 and $4.044 adjustment for underexecution of funds.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604810N / *(U)Joint Strike Fighter Follow On Mod (FoM) - Navy*	Project (Number/Name) 2936 / *JSF Follow On Modernization - Navy*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2936: *JSF Follow On Modernization - Navy*	65.045	20.544	63.387	143.855	-	143.855	225.442	229.055	189.104	121.613	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 198

Note

Total cost, including International partner contributions, USN, USMC, and USAF funding: FY2016 $110.517M; FY2017 $373.463M; FY2018 $739.755M

R-2A table shown above reflects service funding only.

R-2A (section B)/R-3 displays combined program for JSF Follow-on Modernization (FoM).

JSF FoM Includes:
USAF PE 0207142F BPAC 675346
USN PE 0604810N Project Unit 2936
USMC PE 0604810M Project Unit 2935
USN PE 0604800N Project Unit 9999 (FY14): $1.500M
USMC PE 0604800M Project Unit 9999 (FY14): $1.500M
International Partner Contributions

A. Mission Description and Budget Item Justification

F-35 FoM provides continuing incremental upgrades of the three F-35 variants and associated ground equipment. Upgrades are essential mission improvements for Air Interdiction and Strategic Attack, Close Air Support, Suppression and Destruction of Enemy Air Defenses, Offensive and Defensive Counter Air and expanded Surface Warfare. The Block 4 acquisition strategy is based upon incremental deliveries of capabilities in 4 sub-blocks. The strategy includes deliveries on a two year cycle with a focus on hardware and tech refresh change every four years. FoM capability planning includes an efficient transition from F-35 SDD to Follow-on Modernization. As SDD development activities ramp down FoM will assume responsibility for improvements and modernization efforts. Block 4 capability planning includes sub-block 4.1 through 4.4 modernization efforts with initial increment of capability available in FY2021 and subsequent releases every two years.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development - Block 4 Planning and Systems Engineering	85.478	265.280	311.270	0.000	311.270
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810N / *(U)Joint Strike Fighter Follow On Mod (FoM) - Navy*	**Project (Number/Name)** 2936 / *JSF Follow On Modernization - Navy*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Block 4 Planning and Systems Engineering preliminarily design and delta SRR for all variants of the F-35 Aircraft. This is a continuation of the previous Block 4 Requirements Decomposition effort which will include activities leading up to a successful System Functional Review (SFR) and select facility upgrades required for Block 4 research, development, test and evaluation. Included in Block 4 are upgraded capabilities and continuous improvements to maintain Air System viability against evolving threats indicated in the Electronic Warfare Initial Capabilities Document (ICD), the Fifth Generation Fighter Modernization ICD, and the FoM Capability Development Document (CDD), reduce life cycle cost, and improve operational suitability. Expected completion of a Block 4.1 Preliminary Design Review (PDR) and a Block 4.2 System Requirements Review (SRR) will address additional Block 4 capabilities requirements. Post-PDR risk reduction and pre-planning for subsequent Block 4 Modernization events are included. Capability planning effort and preparations will lead to formal acquisition approval of a Block 4 Modernization contract. ***FY 2016 Accomplishments:*** Continued FoM requirements analysis and technical requirements development and decomposition, systems engineering, and technical planning. ***FY 2017 Plans:*** Continue requirements analysis and technical requirements development and decomposition, systems engineering, and technical planning. Conduct Block 4.1 System Requirements Review (SRR). ***FY 2018 Base Plans:*** Conduct a Block 4.1 System Functional Review (SFR) followed by initiation of preliminary design. Release the Block 4 modernization Request for Proposal (RFP) 1QFY2018 with contract award planned for 1QFY2019. ***FY 2018 OCO Plans:*** N/A					
Title: Product Development - Technology Refresh 3 (TR-3)	14.214	32.515	150.370	0.000	150.370
Articles:	-	-	-	-	-
Description: Technology Refresh 3 (TR-3) Design Competition, Development, Integration, and Test. This is the design phase of TR-3 program fully supports Block 3F functionality and allows incorporation of all Block 4 capabilities documented in the System Requirements Document (SRD). TR-3 hardware redesign is required to support 4X processing growth factor based on the current processing estimates for all 3F capabilities. Redesign of TR-3 subsystems (Integrated Core Processor (ICP), Aircraft Memory System (AMS), and Panoramic Cockpit					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810N / *(U)Joint Strike Fighter Follow On Mod (FoM) - Navy*	**Project (Number/Name)** 2936 / *JSF Follow On Modernization - Navy*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Display (PCD)) configurations will contain new backplane technology, commercial operating systems, and modified middleware necessary to take the design of the TR-3 System through Critical Design Review (CDR). ***FY 2016 Accomplishments:*** TR-3 Program produced 5 government-owned specifications to inform the new F-35 avionics hardware redesign required to support 4X processing growth factor based on current processing estimates for all 3F capabilities. The program also started the design of the new Integrated Core Processor (ICP), Panoramic Cockpit Display (PCD), and Aircraft Memory System (AMS). ***FY 2017 Plans:*** The TR-3 program continued to design the Integrated Core Processor (ICP), Panoramic Cockpit Display (PCD), and Aircraft Memory System (AMS). The program will hold System Requirements Review and Preliminary Design Review for the ICP, PCD, and AMS to ensure on-time Critical Design Review, which drives timely first article delivery to the production line in FY23. ***FY 2018 Base Plans:*** The TR-3 program will continue design toward Critical Design Review of the Integrated Core Processor (ICP), Panoramic Cockpit Display (PCD), and Aircraft Memory System (AMS). In addition the TR-3 program will prototype the middleware software that will enable F-35's new messaging architecture delivered as part of TR-3 and ensure compatibility with current F-35 sensors. Additionally the initial lab stand up will occur to ensure timely first article delivery to the production line in FY23. ***FY 2018 OCO Plans:*** N/A					
Title: Infrastructure and Support Costs	10.825	70.668	114.115	0.000	114.115
Articles:	-	-	-	-	-
Description: Funding will support infrastructure investment planning and other test planning activities required for Block 4 development, integration, test and evaluation. Funding related to the Integrated Test Force, government, and contractor labor. Other costs in support of ranges, chase planes and DT site operations. ***FY 2016 Accomplishments:*** Continue development support for defining, managing and acquiring the F-35 capability enhancements identified in approved requirements documents. ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810N / *(U)Joint Strike Fighter Follow On Mod (FoM) - Navy*	**Project (Number/Name)** 2936 / *JSF Follow On Modernization - Navy*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue development support for defining, managing and acquiring the F-35 capability enhancements identified in approved requirements documents. ***FY 2018 Base Plans:*** Continue development support for defining, managing and acquiring the F-35 capability enhancements identified in approved requirements documents. Transfer of integrated test force requirement to FoM F-35 SDD draws to closure. ***FY 2018 OCO Plans:*** N/A					
Title: Test and Evaluation ***Articles:*** ***Description:*** Non-recurring engineering required to plan for the service life extension of existing DT aircraft and modification necessary to bring DT aircraft fleet to a common configuration. Additional upgrades required to support development and evaluation of improvements driven by changes in the threat environment and as identified in the Electronic Warfare ICD, the Fifth Generation Fighter Modernization ICS, and the FoM Capability Development Document (CDD). Execution all DT activities in support of Block 4. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Award initial contract in support of the non-recurring engineering effort. ***FY 2018 Base Plans:*** Funding will support investment planning and prioritization required to maintain future development capability. This funding supports the non-recurring engineering (NRE) for capability upgrades and service life extension modifications to include engine, structural and mission systems updates to maintain the viability of DT fleet for FoM efforts. This funding also supports laboratory upgrades required to support development and verification of capabilities in a relevant environment. ***FY 2018 OCO Plans:*** N/A	0.000 -	5.000 -	164.000 -	0.000 -	164.000 -
Accomplishments/Planned Programs Subtotals	110.517	373.463	739.755	0.000	739.755

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810N / *(U)Joint Strike Fighter Follow On Mod (FoM) - Navy*	**Project (Number/Name)** 2936 / *JSF Follow On Modernization - Navy*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
0207142F JSF Follow on Modernization	47.023	127.302	299.832	-	299.832
International Follow on Modernization	22.793	108.547	151.110	-	151.110
0604810M JSF Follow on Modernization	20.157	74.227	144.958	-	144.958
Navy Subtotals	20.544	63.387	143.855	0.000	143.855

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E/0604810M/2935: *F-35C Follow-on Modernization*	20.157	74.227	144.958	-	144.958	226.310	230.383	190.442	123.531	Continuing	Continuing
• International: *International Follow-on Modernization*	22.793	108.547	151.110	-	151.110	161.934	165.007	83.372	160.473	Continuing	Continuing
• USAF/FOD/0207142F: *USAF Follow-on Modernization*	47.023	127.302	299.832	-	299.832	463.321	474.971	396.488	263.548	Continuing	Continuing

Remarks

This is a joint program with no executive service. Service Acquisition Executive (SAE) authority alternates between the Department of the Navy and the Department of the Air Force and currently resides with the Navy. Program Element 0604800N/0604800M continues USN development efforts budgeted in 0603800N prior to FY2002. The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, and Norway are participants in the SDD phase of JSF.

D. Acquisition Strategy

The FoM acquisition strategy is to employ both Cost and Fixed Price Incentive contracts for the Block 4 engineering and development efforts. A new modernization contract structure will be established for all post SDD Block 4 efforts. In addition, a separate Basic Ordering Agreement or Indefinite Quantity/Indefinite Delivery contract is planned to provide a long term approach to upgrading and maintaining laboratories and test aircraft and supporting technology maturation for future FoM capabilities.

E. Performance Metrics

Overall FoM Performance Metrics will reflect Key Performance Parameters established in the F-35 FoM Capability Development Document.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810N / *(U)Joint Strike Fighter Follow On Mod (FoM) - Navy*	**Project (Number/Name)** 2936 / *JSF Follow On Modernization - Navy*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prime LM 02-C-3002	C/CPFF	Lockheed Martin : FT. Worth, TX	19.485	3.707	Dec 2015	0.000		0.000		-		0.000	23.192	46.384	46.384
Prime LM 16-C-0008	C/CPFF	Lockheed Martin : FT. Worth, TX	38.868	80.299	Dec 2015	39.853	Dec 2016	0.000		-		0.000	86.812	245.832	245.832
Prime LM 14-G-0020(TR3)	C/CPFF	Lockheed Martin : FT Worth, TX	0.000	14.214	Mar 2017	32.515	Mar 2017	150.370	Dec 2017	-		150.370	466.040	663.139	663.139
Prime LM TBD(Phase II)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		171.760	Dec 2017	130.370	Dec 2017	-		130.370	657.019	959.149	959.149
Prime LM BOA 0020 (Nimble Lightning + Pilot Training)	C/CPFF	Lockheed Martin : FT Worth, TX	0.000	1.206	Dec 2015	0.000		0.000		-		0.000	5.470	6.676	6.676
Prime LM TBD (Modernization)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		40.297	Dec 2017	115.900	Dec 2017	-		115.900	1,878.246	2,034.443	2,034.443
Prime LM Flight Test Asset	C/CPFF	Lockheed Martin : FT Worth, TX	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Prime LM IDIQ TBD (ECASE)	C/CPFF	Lockheed Martin : FT. Worth, TX	0.000	0.000		0.000		65.000	Dec 2017	-		65.000	0.000	65.000	65.000
Systems Engineering	C/CPFF	Various : Various	0.000	0.266	Dec 2015	13.370	Dec 2016	0.000		-		0.000	84.010	97.646	97.646
		Subtotal	58.353	99.692		297.795		461.640		-		461.640	3,200.789	4,118.269	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NAWCAD : Patuxent River, MD	0.400	7.503	Dec 2015	20.970	Dec 2016	15.496	Dec 2017	-		15.496	138.721	183.090	188.090
Development Support	WR	NAWCWD : China Lake, CA	0.000	0.429	Dec 2015	7.383	Dec 2016	4.808	Dec 2017	-		4.808	Continuing	Continuing	Continuing
Development Support	Various	Edwards AFB : Edwards AFB, CA	0.000	0.986	Dec 2015	0.000		2.200	Dec 2017	-		2.200	11.380	14.566	14.566
Development Support	Various	Eglin : Various	0.015	0.000		1.940	Dec 2016	3.220	Dec 2017	-		3.220	18.882	24.057	24.057

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604810N / *(U)Joint Strike Fighter Follow On Mod (FoM) - Navy*	Project (Number/Name) 2936 / *JSF Follow On Modernization - Navy*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various	Various : Various	6.277	1.626	Dec 2015	8.714	Dec 2016	8.215	Dec 2017	-		8.215	68.103	92.935	92.935
Development Support	MIPR	AFLCMC : Wright Patterson AFB	0.000	0.281	Dec 2015	0.232	Dec 2016	0.464	Dec 2017	-		0.464	3.037	4.014	4.014
Development Support Engine	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	6.692	10.825		39.239		34.403		-		34.403	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		10.478	Dec 2017	-		10.478	174.872	185.350	185.350
Developmental Test & Evaluation	WR	NAWCWD : China Lake , CA	0.000	0.000		0.000		1.050	Dec 2017	-		1.050	24.396	25.446	25.446
Developmental Test & Evaluation Edwards/AFB	Various	Edwards AFB : Edwards AFB, CA	0.000	0.000		0.000		12.471	Dec 2017	-		12.471	289.067	301.538	301.538
Developmental Test & Evaluation	Various	Various : Various	0.000	0.000		0.000		6.001	Dec 2017	-		6.001	57.087	63.088	63.088
Delveopmental Test Aircraft Viability	C/CPFF	Lockheed Martin : Ft. Worth, TX	0.000	0.000		5.000	Dec 2017	134.000	Dec 2017	-		134.000	0.000	139.000	139.000
		Subtotal	0.000	0.000		5.000		164.000		-		164.000	545.422	714.422	714.422

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Functional Wyle	C/CPFF	Wyle : Arlington, VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
AFLCMC Civilian Pay	Various	AFLCMC CIVPAY : Wright Patterson, AFB	0.000	0.000		30.550	Nov 2016	40.000	Nov 2017	-		40.000	231.610	302.160	302.160

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604810N / *(U)Joint Strike Fighter Follow On Mod (FoM) - Navy*	Project (Number/Name) 2936 / *JSF Follow On Modernization - Navy*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Financial Mgmt Database Support IDS	Various	Various : Various	0.000	0.000		0.760	Nov 2016	0.800	Nov 2017	-		0.800	4.301	5.861	5.861
Earned Value/Finance/ Cost ACT-I	Various	Various : Various	0.000	0.000		0.000		3.178	Nov 2017	-		3.178	23.518	26.696	26.696
CIO BOS	Various	Various : Various	0.000	0.000		0.000		20.000	Nov 2017	-		20.000	95.066	115.066	115.066
Systems System High BOS	Various	Various : Various	0.000	0.000		0.000		9.336	Nov 2017	-		9.336	45.342	54.678	54.678
Other CIO Services	Various	Various : Various	0.000	0.000		0.000		4.739	Nov 2017	-		4.739	22.579	27.318	27.318
Travel	Various	Various : Various	0.000	0.000		0.119	Nov 2016	1.659	Nov 2017	-		1.659	8.569	10.347	10.347
Security Mantech	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	0.000	0.000		31.429		79.712		-		79.712	430.985	542.126	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals	65.045	110.517		373.463		739.755		-		739.755	-	-	-
0207142F JSF Follow on Modernization	-	47.023		127.302		299.832		-		299.832			-
International Follow on Modernization	-	22.793		108.547		151.110		-		151.110			-
0604810M JSF Follow on Modernization	-	20.157		74.227		144.958		-		144.958			-
Project Cost Totals	65.045	20.544		63.387		143.855		-		143.855	0.000	0.000	-

Remarks

Subtotals and totals may not add due to rounding.

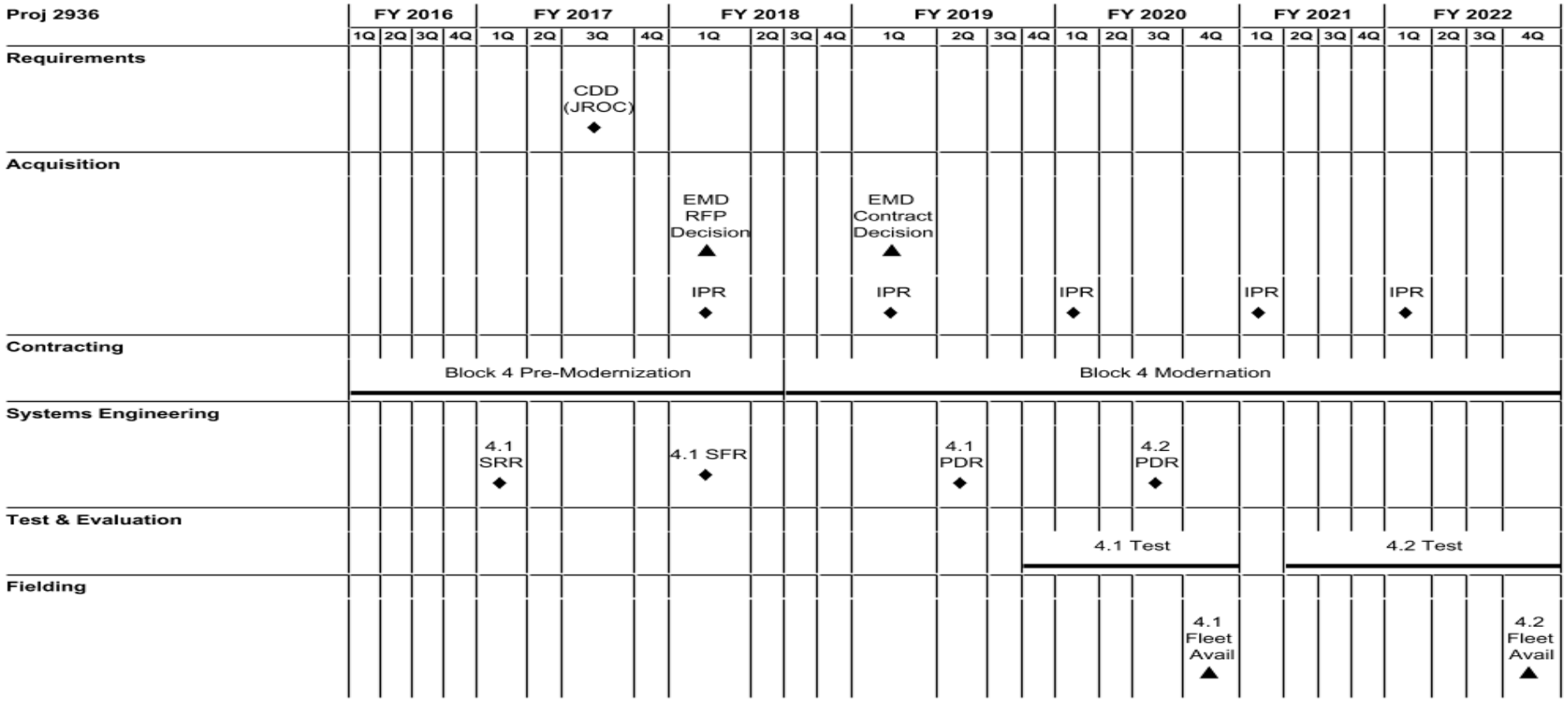
Prior Year reflects $26.660M USAF/$11.802M USN/$11.586M USMC/$14.997M International/Total $65.045M
FY 2016 reflects $47.023M USAF/$20.544M USN/$20.157M USMC/$22.793M International/Total $110.517M
FY 2017 reflects $127.302M USAF/$ 63.387M USN/$74.227M USMC/$108.547M International/Total $373.463M
FY 2018 reflects $299.832M USAF/$143.855M USN/$144.958M USMC/$151.110M International/Total $739.755M

R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604810N / *(U)Joint Strike Fighter Follow On Mod (FoM) - Navy*	Project (Number/Name) 2936 / *JSF Follow On Modernization - Navy*	

	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
JSF Follow on Modernization (FoM) Includes: USAF PE 0207142F BPAC 675346 USN PE 0604810N Project Unit 2936 USMC PE 0604810M Project Unit 2935 USN PE 0604800N Project Unit 9999 (FY14): $1.500 USMC PE 0604800M Project Unit 999 (FY14) : $1.500									

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810N / *(U)Joint Strike Fighter Follow On Mod (FoM) - Navy*	**Project (Number/Name)** 2936 / *JSF Follow On Modernization - Navy*



2018PB - 0604810N - 2936

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604810N / *(U)Joint Strike Fighter Follow On Mod (FoM) - Navy*	**Project (Number/Name)** 2936 / *JSF Follow On Modernization - Navy*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2936				
Requirements: Final CDD (JROC)	3	2017	3	2017
Acquisition: Modernization RFP Decision	1	2018	1	2018
Acquisition: Modernization Contract Decision	1	2019	1	2019
Acquisition: Interim Program Review (IPR) FY18	1	2018	1	2018
Acquisition: Interim Program Review (IPR) FY19	1	2019	1	2019
Acquisition: Interim Program Review (IPR) FY20	1	2020	1	2020
Acquisition: Interim Program Review (IPR) FY21	1	2021	1	2021
Acquisition: Interim Program Review (IPR) FY22	1	2022	1	2022
Contracting: Block 4 Pre-Modernization	1	2016	2	2018
Contracting: Block 4 Modernization	3	2018	4	2022
Systems Engineering: 4.1 Preliminary Design Review (PDR)	2	2019	2	2019
Systems Engineering: 4.2 Preliminary Design Review (PDR)	3	2020	3	2020
Systems Engineering: 4.1 System Requirements Review (SRR)	1	2017	1	2017
Systems Engineering: 4.1 System Functional Review (SFR)	1	2018	1	2018
Test & Evaluation: Test & Evaluation: 4.1 Test	4	2019	4	2020
Test & Evaluation: Test & Evaluation: 4.2 Test	2	2021	4	2022
Fielding: Block 4.1 Fleet Availability	4	2020	4	2020
Fielding: Block 4.2 Fleet Availability	4	2022	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605013M *I Marine Corps IT Dev/Mod*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	77.411	3.915	4.856	14.865	-	14.865	16.020	3.322	2.604	2.653	Continuing	Continuing
2906: *Marine Corps IT*	77.411	3.915	4.856	14.865	-	14.865	16.020	3.322	2.604	2.653	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program establishes, sustains, and continuously refines computing platforms and Information Technology (IT) services as tested, certified and reusable components of a Marine Corps IT framework that spans the range of military and garrison operations.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	4.824	4.856	4.622	-	4.622
Current President's Budget	3.915	4.856	14.865	-	14.865
Total Adjustments	-0.909	0.000	10.243	-	10.243
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.872	0.000			
• SBIR/STTR Transfer	-0.037	0.000			
• Program Adjustments	0.000	0.000	10.179	-	10.179
• Rate/Misc Adjustments	0.000	0.000	0.064	-	0.064

Change Summary Explanation

The FY 2018 funding request increase of $10.009M supports Marine Corps Recruiting Information Support System (MCRISS) and Manpower Operations Systems (MOS) modernization efforts; Defense Readiness Reporting System (ICM-RMS) software development and Technology Services Organization (TSO) database modernization.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy									Date: May 2017			
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0605013M / *Marine Corps IT Dev/Mod*				Project (Number/Name) 2906 / *Marine Corps IT*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
2906: *Marine Corps IT*	77.411	3.915	4.856	14.865	-	14.865	16.020	3.322	2.604	2.653	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The FY 2018 funding request increase of $10.009M supports Marine Corps Recruiting Information Support System (MCRISS) and Manpower Operations Systems (MOS) modernization efforts; Defense Readiness Reporting System, Integrated Clinical Management-Risk Mitigation System (ICM-RMS) software development and Technology Services Organization (TSO) database modernization.

A. Mission Description and Budget Item Justification

Organizational Messaging Service (OMS) formerly Defense Message System (DMS), as directed by the Joint Staff and HQMC Command, Control, Communications and Computers (C4), meet the organizational messaging requirement for Non-Secure Internet Protocol Router Network (NIPRNET) and Secret Internet Protocol Router Network (SIPRNET). Telos Automated Message Handling System (AMHS) is the current implementation that provides Web-interface for system administration and for user messaging (including readers). Organizational messages (OM) are used to direct and commit resources, provide user authentication, non-repudiation, confidentiality, and integrity. Currently, Area Control Center's (ACC) Pendleton and Lejeune receive approximately (1) one million messages annually. The Defense Information Systems Agency (DISA) is the lead agency and Global System Manager (GSM) for OMS products and its authority to operate (ATO). In FY16, OMS will conduct research and analysis to assist in the transition to the next generation organizational messaging solutions/capabilities that are DISA compliant. Additionally, in the first quarter of FY16 OMS is committed to complete their efforts to comply with the Department of Defense (DoD) mandated datacenter consolidation with the migration of the Pendleton ACC into the MAGTF Information Technology Support Center (MITSC) West Data Center.

Manpower Operations Systems (MOS) is a portfolio of enterprise IT systems and modules that support manpower business operations for the Total Force (active and reserve). The investment in the portfolio improves dataflow and increases reliability, functionality, and accuracy of data while reducing the manpower required to operate and maintain these systems/operations. Development is partially driven by regulatory and policy changes mandated by Congress, DOD, Department of the Navy (DON), and United States Marine Corps (USMC). These systems support all five tiers of Manpower: 1) Individual Marine, 2) Small Unit Leader; 3) Unit, 4) Installation Personnel Administration Center (IPAC)/Disbursing Echelon, and 5) Headquarters Marine Corps (HQMC) Manpower and Reserve Affairs (M&RA)/ Defense Finance and Accounting Service. The MOS portfolio provides support in functional areas such as permanent change of station assignments, retention, mobilization, manpower planning, line of duty determination, personnel accountability, individual augmentation, personnel records management and maintenance, management of case incidents, civilian professional development planning, pay entitlement determinations, promotion and performance evaluations and self-service/visibility of personnel data. MOS programs interface with other systems to provide manpower data and web services functionality for pay and personnel transactions between systems. Systems in the portfolio include the Web-enabled Manpower Assignment Support System (WebMASS), Performance Evaluation System (PES), Total Force Retention System (TFRS), Optical Digital Imaging - Records Management System (ODI-RMS), Manpower Mobilization Assignment System (MMAS), and the Requirements, Transition and Manpower Management System (RTAMMS) Total Force Administration System (TFAS) (composed of the Secure Personnel Accountability (SPA) Module, Automated Performance Evaluation System (APES) and the Drill Management Module (DMM). The current system has become obsolete and is unable to maintain an acceptable Cyber Security posture. Modernization efforts will involve business process and application reengineering; delivering an application on a modern and secure platform.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

Marine Corps Enterprise Information Technology Services (MCEITS) provides an overarching portfolio of capabilities to deliver "Power to the Edge" for the Marine Corps. Born from an effort to establish a Continuity of Operations Plan of HQMC Automated Information Systems, MCEITS enables realignment of the existing USMC environment of applications, databases, networks, and facilities into an integrated architecture of programs to deliver new information technology capabilities based on a common infrastructure and shared services. MCEITS is a unifying framework of both the Enterprise Services to be delivered, and the infrastructure and systems which must be deployed to enable delivery of those services. Initially it will encompass the Operational, Technical, and Systems architectures of the enterprise environment. However, ultimately it will extend to transform information access both in garrison and in the deployed environment. Combined with policy, procedure and standards provided by HQMC (C4), MCEITS will allow for architectural standardization, consolidated management, and seamless interoperability of and access to the data residing in currently fielded applications (business and tactical). Testing efforts will be focused on MCEITS provided services operating within a MCEITS hosting environment. MCEITS enables services to be federated throughout the Marine Corps to include Content Discover and Delivery, Collaboration and Text Chat, between the service consumer and provider. Efforts for MCEITS will focus on application migration development, the analysis, research and design of increments 3 & 4 and the technology refreshed software and hardware infrastructure, modernized and enhanced MCEITS high availability, automation and service management with continued Pre-Planned Product Improvements (P3I) efforts.

Marine Corps Recruiting Information Support System (MCRISS) is an enterprise level system to automate administrative procedures for the recruiting station operations. This customized automated System, centered on procedures in the Guidebook for Recruiters, Volume I, dramatically improves efficiency and effectiveness in Marine Corps recruiting. Furthermore, Military Entrance Processing Command requires Marine Corps recruiting to provide information in electronic format only. MCRISS is the Marine Corps Recruiting Command's program to manage applicant processing from commitment to accession/commission into the Marine Corps and Marine Corps Reserve. This enterprise approach allows for efficient sharing of information about potential recruits and recruiter screening efforts, yielding a more cost effective process. The current system requires modernization of the systematic recruiting components to provide efficiency for the Recruiting force from the Headquarters element down to the Recruiter, and requires numerous updates in order to become fully compliant with Cyber Security and CNA policies and mandates to protect PII/PHI data captured and stored in the system. The Modernization effort will involve a competitive evaluation of several prototype systems, leading to a selection of a viable platform and the complete replacement of the current MCRISS system with modern and secure technology.

Paperless Office/Acquisition (PA) funding supports development and enhancement of Purchase Request (PR) Builder which is the Marine Corps enterprise solution for the electronic generation of purchase requests, funding documents, miscellaneous payments, and serves as the front-end system for feeding the DOD enterprise contracting writing system Standard Procurement System (SPS). Development and enhancement of PR Builder is required to ensure financial and contracting functional requirements and Marine Corps business processes are developed, designed, tested and implemented within the system. PR Builder has instituted a quarterly release schedule based on prioritized requirements received from the Functional Requirements Board. Modifications to the contract are required for each release once Level of Effort (LOE) and costs are known. Milestones for V4.3.3 have been adjusted to Q1FY16 due to delays in completion of the MCEITS migration. Future DOD, DON, and USMC initiatives that will need to be researched and developed include support or adherence to: Standard Financial Information Structure (SFIS), Standard Line of Accounting (SLOA), and Purchase Request Data Standards (PRDS).

Defense Readiness Reporting System-Marine Corps (DRRS-MC) funding will develop an Integrated Clinical Management-Risk Mitigation System (ICM-RMS), a software program, that will provide a Force Preservation Tool that utilizes a risk algorithm to proactively identify at-risk service members. ICM-RMS was established to provide Commanders with a real-time, objective, and holistic assessment of their Marines that integrates medical, mental health, and command input. Designed

specifically to drive the force preservation process, ICM-RMS will provide Commanders with critical information from multiple input sources required to track behavioral changes, assign risk score, and send automated alerts to leadership of at risk personnel and other key force preservation indicators. The ICM-RMS development was initiated 4th quarter FY16 with $2.428M to support an approved Universal Need Statement.

Risk Management Initiative (RMI) funding addresses outdated Safety systems, capability gaps and support logistics Information Technology (IT) portfolio rationalization. When completed, RMI will consolidate DoN risk management requirements into a single Program of Record (POR) and provide modern Safety capabilities for the military component of the Navy Total Force (both active and reserve). The USN serves as the lead for this effort with the Marine Corps providing a fair share towards development starting in FY16 (~20%). RMI capability consists of four distinct increments of capability: (1) Streamlined Incident Reporting (SIR), (2) Single Point of Entry (SPOE), (3) Safety Program Management (SPM), (4) Analysis and Dissemination (A&D). These four pillars will enable agile responses to business rule changes, automation of routine actions, improvement of data integrity and facilitation of self-service for organizations and individuals.

Technology Services Organization (TSO): This Technical refresh/upgrade of SABRS database technology from ADABAS to a newer database architecture provides a modern and well-supported database technology that ultimately enables the normalization of Marine Corps financial data in a true relational database.
The newer database architecture will provide a modern data platform to support transactional operations within the DON General Fund accounting systems to optimize performance, readily scale, and reliably support data structure, quality, and availability for subsequent analysis to drive decision making. Successful implementation will be transparent to the SABRS user community while minimizing the potential for unanticipated system degradation/outages and secure the system's operational longevity. This Multi phased project (over 4 years), system supports 5k+ direct users, impacts entire DON General Funds accounting. Out year costs will be assumed into planned sustainment of SABRS.
The current configuration is antiquated with diminishing industry support. There is a limited pool of applicants available to work on ADABAS. Sustainment is cost prohibitive and the technology stack limits flexibility to fully support 21st century data/system requirements. TSO will be unable to mitigate identified technical and support risk associated with current technology which could result in systems degradation and/or outage. This further leaves TSO unable to improve data integrity and audit compliance in SABRS by employing a more modern database.
The impact on the operational capability is the risk to DON accounting and Financial Management operations increases daily for major system degradation or outage in both likelihood of occurrence and extent of the negative impact of such an occurrence. This will result in the system becoming less and less viable to the point where it will no longer support Marine Corps operations.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Defense Readiness Reporting System-Marine Corps (DRRS-MC)	1.095	0.000	1.412	0.000	1.412
Articles:	-	-	-	-	-
Description: The increase of $1.412M from FY17 to FY18 supports the completion of ICM-RMS system development initiated 4th quarter FY16.					
FY 2016 Accomplishments: Initiated development of Integrated Clinical Management - Risk Mitigation System (ICM-RMS) software program.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 Base Plans:*** Initiate development of ICM-RMS system enhancements ***FY 2018 OCO Plans:*** N/A					
Title: MANPOWER OPERATIONS SYSTEMS (MOS) ***Articles:*** ***Description:*** The $6.203M increase from FY17 to FY18 will initiate the modernization of the Optical Digital Imaging - Records Management System (ODI-RMS) and Manpower Personnel Administration (MPA) Modernization. The current ODI-RMS system has become obsolete and is unable to maintain an acceptable Cyber Security posture. Modernization for both efforts will involve business process and application reengineering; delivering an application on a modern and secure platform. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Initiate Optical Digital Imaging - Records Management System (ODI-RMS) and Manpower Personnel Administration (MPA) Modernization efforts. ***FY 2018 OCO Plans:*** N/A	0.000 -	0.000 -	6.203 -	0.000 -	6.203 -
Title: MARINE CORPS ENTERPRISE INFORMATION TECHNOLOGY SERVICES (MCEITS) ***Articles:*** ***Description:*** The decrease of $2.350M from FY17-FY18 is a result of a re-phasing of the program to properly align resources with the current acquisition schedule. ***FY 2016 Accomplishments:*** -Continued to scale infrastructure capacity to host additional applications planned to migrate.	1.920 -	3.726 -	1.376 -	0.000 -	1.376 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
-Initiated analysis, research and design for MCEITS Increment 3 & 4 and the Application Migration Development. ***FY 2017 Plans:*** -Continue to scale infrastructure capacity to host additional applications planned to migrate. -Continue analysis, research and design of the MCEITS Increment 3 & 4 and Development Environment. ***FY 2018 Base Plans:*** -Continue to scale infrastructure capacity to host additional applications planned to migrate. -Complete analysis, research, and design for the MCEITS Increment 3 & 4 and Development Environment. ***FY 2018 OCO Plans:*** N/A					
Title: MARINE CORPS RECRUITING INFORMATION SUPPORT SYSTEM (MCRISS) ***Articles:*** ***Description:*** The $4.160M increase from FY17 to FY18 will be leveraged to execute the modernization of MCRISS. The current system requires modernization of the systematic recruiting components to provide efficiency for the Recruiting force from the Headquarters element down to the Recruiter, and requires numerous updates in order to become fully compliant with Cyber Security and CNA policies and mandates to protect PII/ PHI data captured and stored in the system. The Modernization effort will involve a competitive evaluation of several prototype systems, leading to a selection of a viable platform and the complete replacement of the current MCRISS system with modern and secure technology. ***FY 2016 Accomplishments:*** -Initiated Recruiter Client Tool (RCT) Development and enhanced capabilities development. ***FY 2017 Plans:*** -Initiate MCRISS Modernization effort. ***FY 2018 Base Plans:*** -Continue MCRISS Modernization effort. ***FY 2018 OCO Plans:*** N/A	0.740 -	0.129 -	4.289 -	0.000 -	4.289 -
Title: ORGANIZATIONAL MESSAGING SERVICE (OMS) / DEFENSE MESSAGE SYSTEM (DMS) ***Articles:*** ***FY 2016 Accomplishments:***	0.160 -	0.000 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
-Initiated and completed research the feasibility of migrating Marine Corps organizational messaging capabilities into a virtual environment. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: PAPERLESS ACQUISITION (PA) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** -Initiate development of Engineering Change Proposals (ECPs). ***FY 2018 Base Plans:*** -Continue development of Engineering Change Proposals (ECPs). ***FY 2018 OCO Plans:*** N/A	0.000 -	0.396 -	0.335 -	0.000 -	0.335 -
Title: TECHNOLOGY SERVICES ORGANIZATION (TSO) ***Articles:*** ***Description:*** FY18 Funding ($450K RDT&E) will assist with research and development of the most efficient approach for transitioning the DON General Fund Accounting System, SABRS, to a modern data platform in order to eliminate the risk associated with an aging and expensive technology with dwindling number of technical experts. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:***	0.000 -	0.000 -	0.450 -	0.000 -	0.450 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 Base Plans:*** Initiate research and development of the most efficient approach for transitioning the DON General Fund Accounting System, SABRS, to a modern data platform (FY18). ***FY 2018 OCO Plans:*** N/A					
Title: SAFETY - RISK MANAGEMENT INITIATIVE (RMI) ***Articles:*** ***Description:*** RISK MANAGEMENT INITIATIVE (RMI) The RMI program is a consolidation of Navy and Marine Corps risk management requirements into a single safety system, thus eliminating the need to modify multiple legacy systems. The Navy serves as the lead for this effort with the Marine Corps providing a fair share (approximately 20%) towards the research and development of the RMI system starting in FY16. The Navy portion is funded in PE 0605013N / Information Technology Development; Project 2905.L39 / BUPERS IT ***FY 2016 Accomplishments:*** - N/A ***FY 2017 Plans:*** - Initiate Contract funding for Analysis & Dissemination (A&D). - Initiate Testing Phase for Analysis & Dissemination (A&D). - Initiate Contract funding for Safety Program Management (SPM). - Initiate SPM Design and Business Case Analysis (BCA). ***FY 2018 Base Plans:*** - Complete Contract funding for Analysis & Dissemination (A&D). - Complete Testing Phase for Analysis & Dissemination (A&D). - Complete Contract funding for Safety Program Management (SPM). - Complete SPM Design and Business Case Analysis (BCA). ***FY 2018 OCO Plans:*** N/A	0.000 -	0.605 -	0.800 -	0.000 -	0.800 -
Accomplishments/Planned Programs Subtotals	3.915	4.856	14.865	0.000	14.865

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PMC/4630 - MCRISS: *MC Recruiting Info Support System*	0.008	0.049	0.049	-	0.049	0.369	0.050	0.051	0.052	Continuing	Continuing
• PMC/4630 - PA: *Paperless Office/Acquisition*	3.105	0.000	0.122	-	0.122	0.124	0.127	0.130	0.133	Continuing	Continuing
• PMC/4630-MCEITS: *MC Enterprise IT Services*	8.965	3.157	11.036	-	11.036	31.841	32.251	4.018	4.130	Continuing	Continuing
• PMC/4630 - OMS: *Organizational Messaging Service (OMS)*	0.868	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• PMC/4620- MOS: *Manpower Operations Systems (MOS)*	0.000	0.294	0.241	-	0.241	0.246	3.000	3.000	0.000	Continuing	Continuing
• PMC/4617 - MOS: *Manpower Operations Systems (MOS)*	0.392	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• PMC/4620 - Safety: *Safety*	0.099	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• PMC/4630 - TSO: *Technology Services Organization (TSO)*	0.829	0.841	1.305	-	1.305	1.328	1.350	1.377	1.404	0.000	8.434

Remarks

D. Acquisition Strategy

Organizational Messaging Service (OMS) is a Joint Acquisition Category (ACAT) IAM program. It is Assistant Secretary Defense Command, Control, Communication and Intelligence mandated. Each year the Joint Interoperability Test Command (JITC) runs Operational Test (OT) assessments on OMS software versions and maintenance releases. Marine Corps participation is vital to ensuring that the implementation of OMS is interoperable with all DOD CINCs, services, and agencies. Furthermore, as follow-on organizational messaging solutions for OMS are being identified, materiel solution analysis activities will be conducted. In FY16, OMS will procure Hyper Converged Virtualization Platforms and switches to replace the current equipment that can no longer be warrantied and is necessary to remain compliant with ATO requirements.

Manpower Operations Systems (MOS) within this portfolio follows an Evolutionary Acquisition (EA) approach: 1. Define, develop, and deliver an initial or "core" capability based on mature technology. 2. "Core" capability will be incrementally improved over an extended period of time. Incremental Development Model: 1. Iterative cycles of requirements definition, design, build and evaluation. The contracting strategy across the portfolio is to utilize competitive firm-fixed price contracts.

Marine Corps Enterprise Information Technology Services (MCEITS) is using an incremental acquisition approached implemented in separate releases followed by Pre-Planned Product Improvements (P3Is) delivering capabilities faster and more efficiently. The program will deliver an initial capability and continue integration and production of the system in accordance with the USMC Information Enterprise Strategy. The objective is to balance needs with available commercial and government

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

solutions and resources, and to rapidly adopt evolving technologies and requirements and keep pace with the continuously evolving DoD Net-Centric enterprise to provide capabilities to the Marines. This strategy is supported by an Indefinite Delivery Indefinite Quantity contracting vehicle which will allow the contractor to provide the full range of capabilities, services and solutions necessary to satisfy the requirements through incremental implementation of technology, processes and capabilities. Capabilities will be delivered through individual task orders to ensure technology and services are inserted according to the overall program goals, user requirements and program schedule.

Paperless Acquisition (PA) will use an incremental development methodology utilizing short development periods. The contracting strategy is to use a firm-fixed price contract to reduce risk to government, with additional capabilities defined by a Marine Corps Configuration Control Board and delivered to the service integrator as a modification to the contract. The delivery of small functional capabilities allows for measurable enhancements to the base system while keeping Post Deployment System Support costs relatively low.

Defense Readiness Reporting System-Marine Corps (DRRS-MC) is a Mission Assurance Category I (MAC I) Classified system that integrates information on reportable unit readiness (Marines/ Equipment) and mission effectiveness of deployed and contingency forces. Mission (Core/Assigned) determined to be vital to the operational readiness and mission effectiveness of deployed and contingency forces. The operation mission of Integrated Clinical Management-Risk Mitigation System (ICM-RMS) is that it will enable Commanding Officers and Senior Enlisted Advisors to make informed decisions on force preservation assessments.

Marine Corps Recruiting Information Support System (MCRISS) utilizes modular/incremental development to maintain system operability while allowing for continued development. Contracting strategy for Legacy system support includes competitive firm-fixed price IDIQ contracts; MCRISS Modernization effort to be executed leveraging direct-award opportunity to a qualified 8(a) small business partner.

Risk Management Initiative (RMI) consolidates risk management requirements into a single system utilizing a single vendor Indefinite Delivery / Indefinite Quantity (IDIQ). The USN serves as the lead for the RMI effort with the Marine Corps providing a fair share towards development starting in FY16. The approach for RMI is an incremental COTS configuration model providing usable increments of capability within 24-month cycles after funds certification for each. Development of the Streamlined Incident Reporting and Single Point of Entry capability increments via separate task orders using RDT&E beginning in FY14. Safety Program Management and Analysis & Dissemination will be initiated with FY16 RDT&E.

Technology Services Organization (TSO) SABRS: FY18 Funding ($450K RDT&E) will assist with research and development of the most efficient approach for transitioning the DON General Fund Accounting System, SABRS, to a modern data platform in order to eliminate the risk associated with an aging and expensive technology with dwindling number of technical experts. This Technical refresh/upgrade of SABRS database technology from ADABAS to a newer database architecture provides a modern and well-supported database technology that ultimately enables the normalization of Marine Corps financial data in a true relational database.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605013M / *Marine Corps IT Dev/Mod*	Project (Number/Name) 2906 / *Marine Corps IT*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DRRS-MC (ICM-RMS) - Software Development	FFRDC	Georgia Technical Institute : Atlanta, GA	0.000	1.095	Sep 2016	0.000		0.000		-		0.000	0.000	1.095	-
MOS ODI-RMS Modernization	TBD	TBD : TBD	0.000	0.000		0.000		3.203	Mar 2018	-		3.203	0.000	3.203	-
MCEITS P3I Efforts	C/IDIQ	SAIC : McLean VA	5.532	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MCRISS Modernization	SS/IDIQ	CHENEGA DECISION SCIENCES, LLC : Lorton, VA	0.000	0.000		0.000		4.289	Jan 2018	-		4.289	0.000	4.289	-
MCRISS Recruiter Client Development	C/FP	CGI : Dumfries, VA	0.118	0.156	Mar 2017	0.000		0.000		-		0.000	0.000	0.274	-
MCRISS Recruiter Client Tool (RCT) Development and Enhanced Capabilities Development	C/IDIQ	Buchanan & Edwards, Inc : Arlington, VA	0.000	0.584	Jul 2016	0.129	Jun 2017	0.000		-		0.000	0.000	0.713	-
Paperless Ofc Acq Dev	C/FFP	TBD : TBD	0.000	0.000		0.396	Jun 2017	0.335	Jun 2018	-		0.335	Continuing	Continuing	Continuing
RMI	C/BA	SPAWAR: : San Diego, CA	0.000	0.000		0.605	Jan 2017	0.800	Jan 2018	-		0.800	0.000	1.405	-
DRRS-MC (ICM-RMS) - Software Development	TBD	TBD : TBD	0.000	0.000		0.000		1.412	Dec 2017	-		1.412	0.000	1.412	-
MOS MPA Modernization	TBD	TBD : TBD	0.000	0.000		0.000		3.000	Jul 2018	-		3.000	0.000	3.000	-
TSO	TBD	TBD : TBD	0.000	0.000		0.000		0.450	Aug 2018	-		0.450	0.000	0.450	-
Prior Years Cumulative Funding	Various	Various : Various	43.781	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	49.431	1.835		1.130		13.489		-		13.489	-	-	-

Remarks

The FY 2018 funding request increase of $12.359M supports Marine Corps Recruiting Information Support System (MCRISS) and Manpower Operations Systems (MOS) modernization efforts.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605013M / *Marine Corps IT Dev/Mod*	Project (Number/Name) 2906 / *Marine Corps IT*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	Various : Various	14.876	0.000		0.000		0.000		-		0.000	0.000	14.876	-
MCEITS Pilot Services	C/BA	TBD : TBD	0.000	0.000		1.076	Jun 2017	0.000		-		0.000	0.000	1.076	-
MCEITS Application Migration Support	C/FFP	SYNEREN : Arlington, VA	0.000	0.657	Jan 2017	1.300	Jul 2017	1.056	Jul 2018	-		1.056	0.000	3.013	-
MCEITS Application Development Testing	C/BA	SYNEREN : Arlington, VA	0.000	1.061	Nov 2016	0.900	Aug 2017	0.320	Aug 2018	-		0.320	0.000	2.281	-
MCEITS HSI Support	WR	NSWC : Dahlgren VA	0.240	0.000		0.050	Oct 2017	0.000		-		0.000	0.000	0.290	-
MCEITS EITC Support	WR	SPAWAR : Charleston SC	0.206	0.000		0.400	Jan 2017	0.000		-		0.000	0.000	0.606	-
		Subtotal	15.322	1.718		3.726		1.376		-		1.376	0.000	22.142	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MCEITS Enterprise Architecture	Various	Various : Various	10.451	0.202	Jan 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	Various : Various	0.653	0.000		0.000		0.000		-		0.000	0.000	0.653	-
MCEITS Modeling & Simulation	C/FFP	TSC : Silver Spring MD	1.554	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	12.658	0.202		0.000		0.000		-		0.000	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
OMS Hyper Converged Virtualization	C/FFP	Carahsoft Technology : Reston VA	0.000	0.160	Sep 2016	0.000		0.000		-		0.000	0.000	0.160	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	0.160		0.000		0.000		-		0.000	0.000	0.160	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	77.411	3.915		4.856		14.865		-		14.865	-	-	-

Remarks

The FY 2018 funding request increase of $12.359M supports Marine Corps Recruiting Information Support System (MCRISS) and Manpower Operations Systems (MOS) modernization efforts.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

Paperless Office/Acquisition

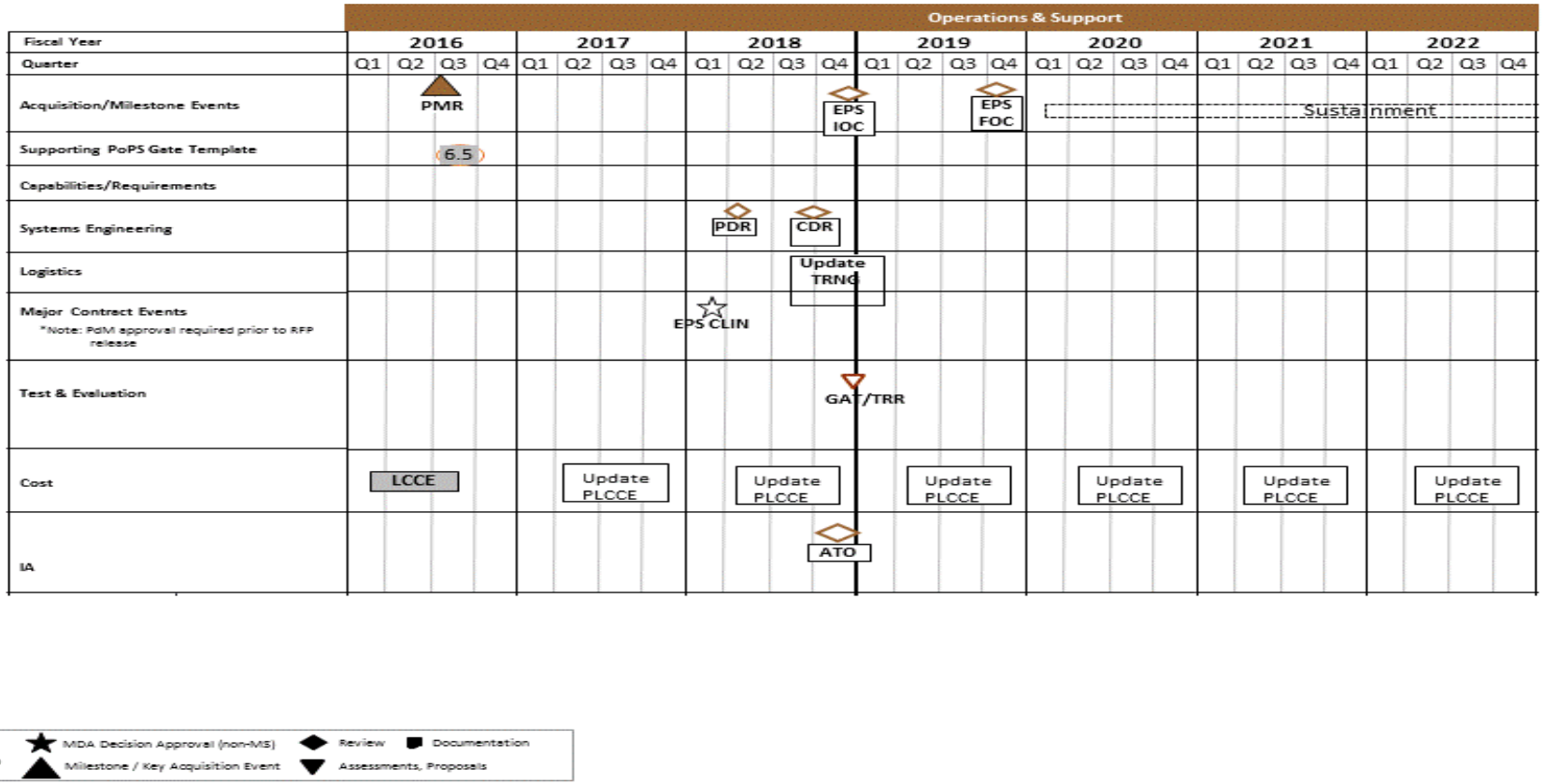

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

MCEITS

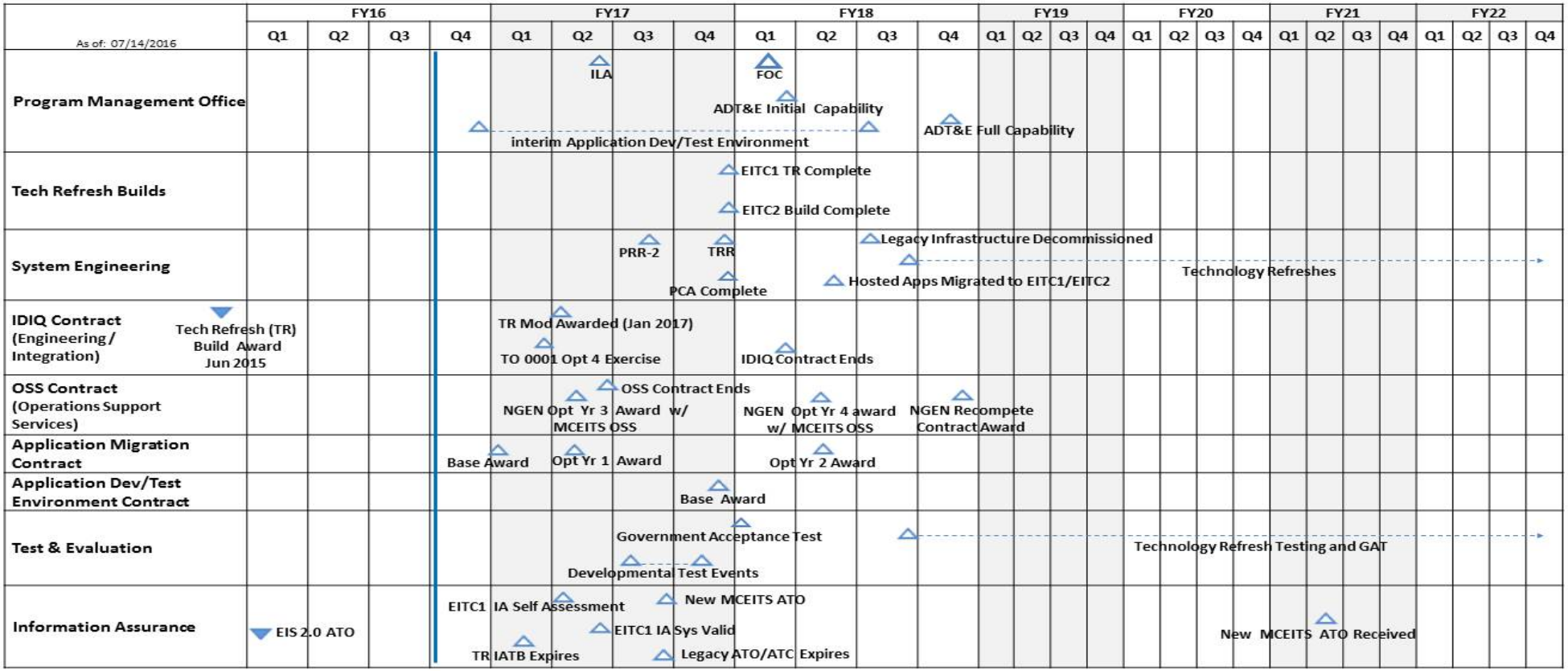

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

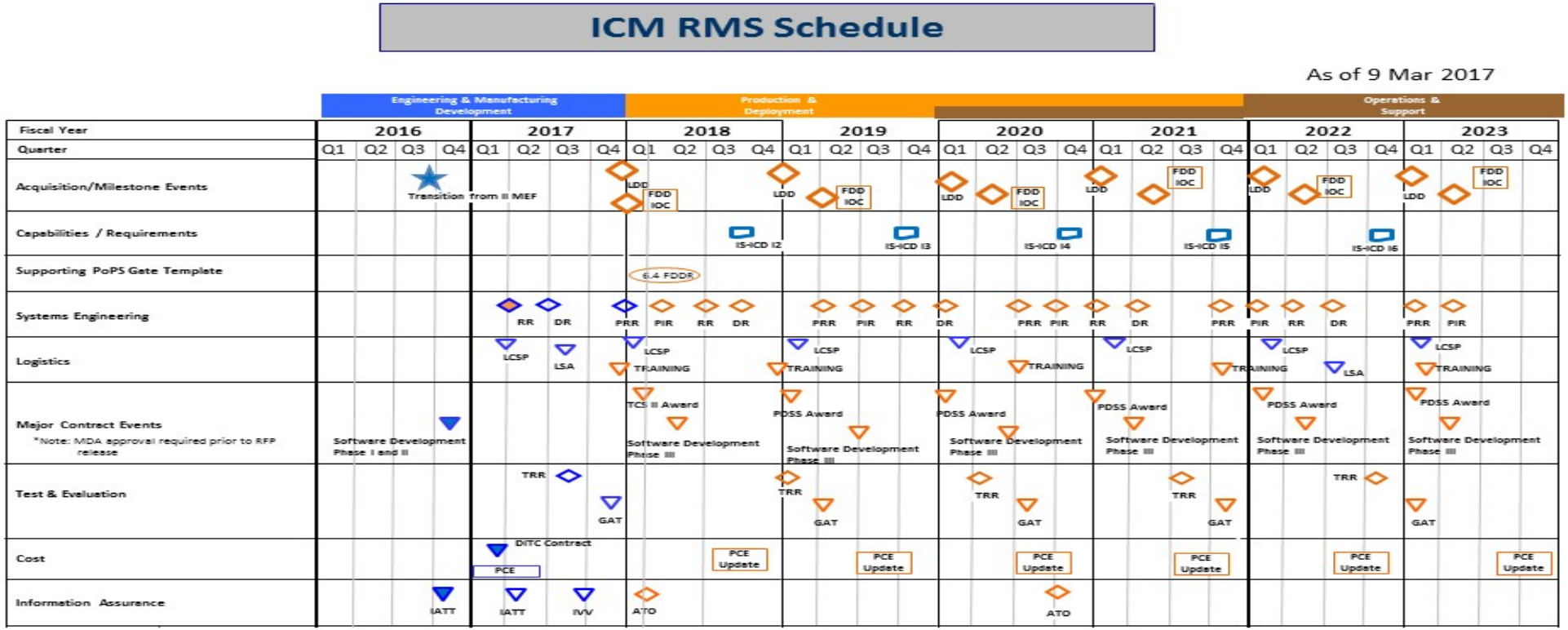

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

MOS

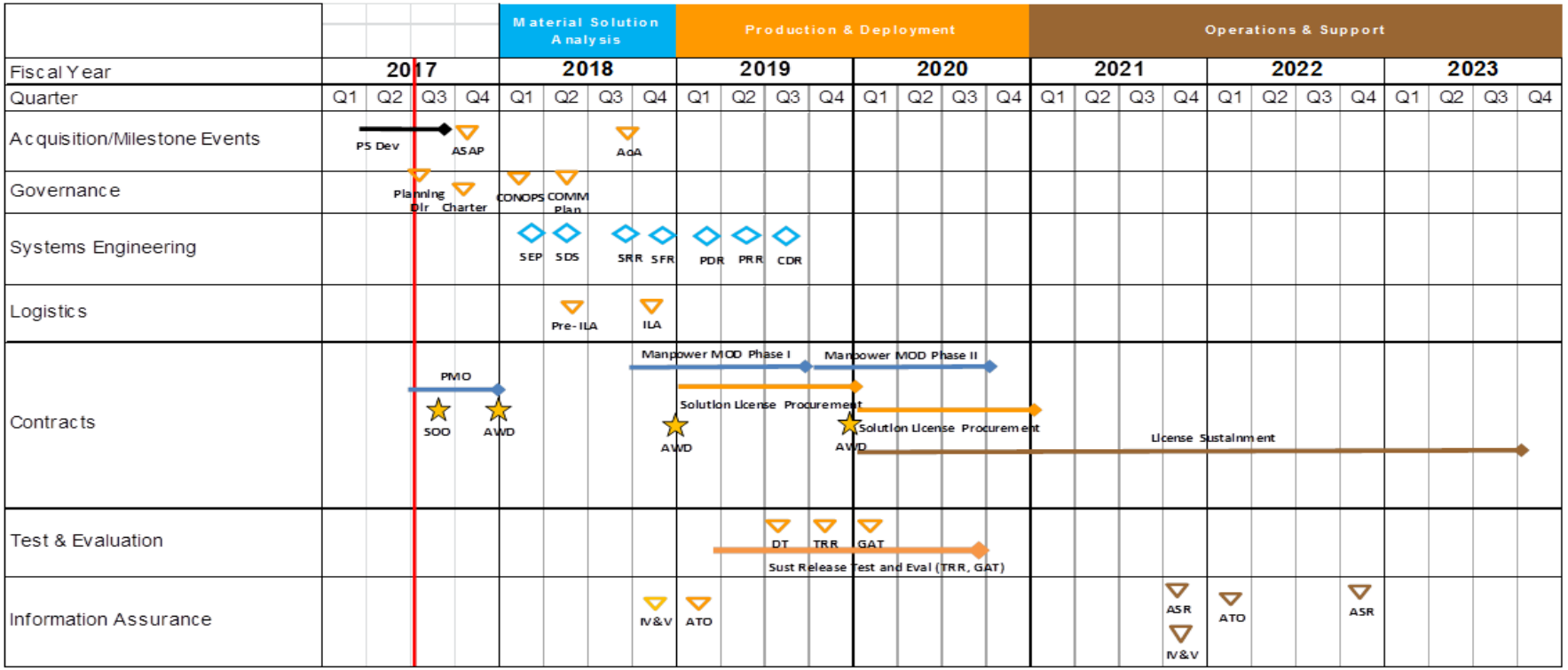

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

MCRISS

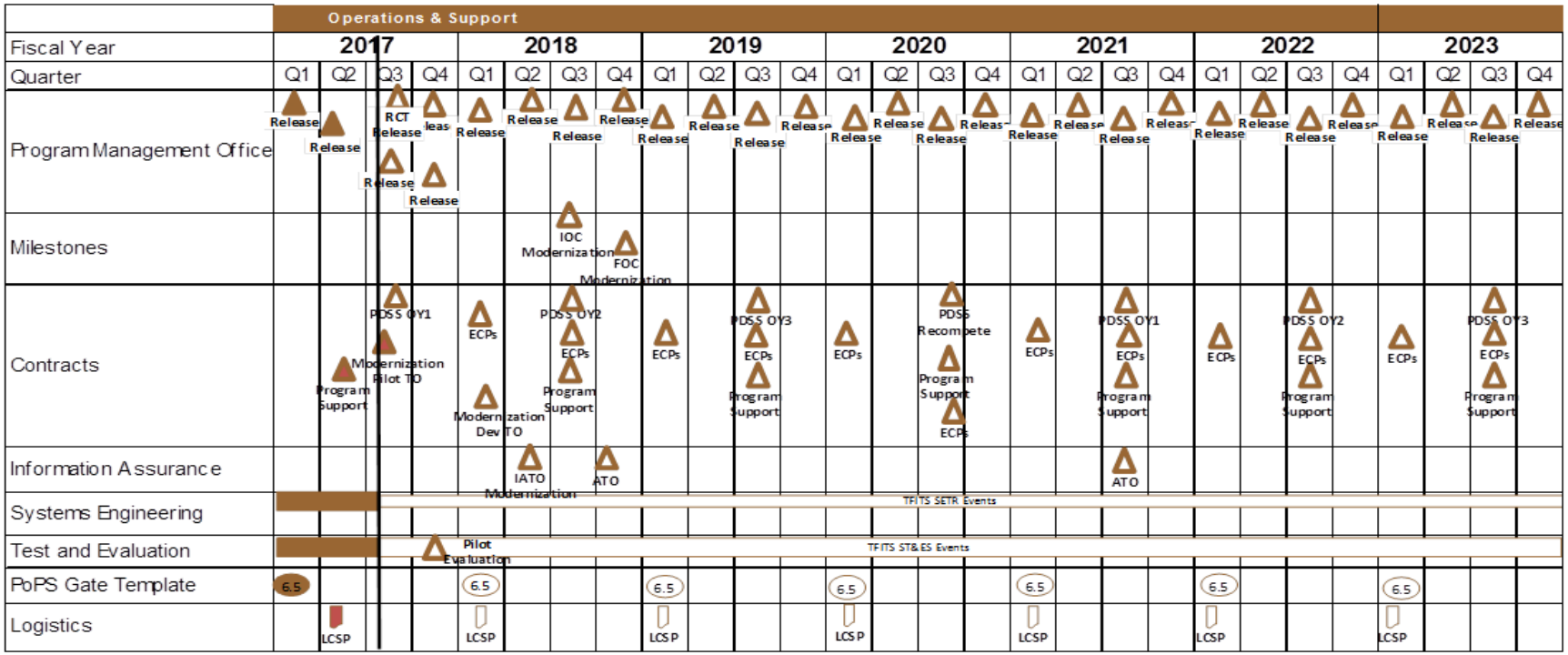

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013M / *Marine Corps IT Dev/Mod*	**Project (Number/Name)** 2906 / *Marine Corps IT*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2906				
Increment 1 Full Operational Capability (FOC) (MCEITS)	1	2018	1	2018

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605013N *I Information Technology Development*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	265.396	77.895	97.066	152.977	-	152.977	168.639	153.435	121.673	77.296	Continuing	Continuing
2901.: *AAUSN IT*	26.147	20.374	15.177	17.530	-	17.530	31.673	24.250	4.579	4.633	Continuing	Continuing
2903: *NAVAIR IT*	3.159	6.530	5.332	10.915	-	10.915	6.131	6.017	5.479	2.394	Continuing	Continuing
2904: *NAVSEA IT*	138.399	16.827	30.879	64.233	-	64.233	52.136	36.501	41.739	23.989	Continuing	Continuing
2905.: *BUPERS IT*	45.011	12.879	29.664	52.957	-	52.957	65.959	74.545	59.118	35.310	Continuing	Continuing
3167: *Joint Technical Data Integration (JTDI)*	24.122	6.093	5.514	2.533	-	2.533	4.748	4.534	4.034	4.113	Continuing	Continuing
3185: *Joint Airlift Information System (JALIS)*	1.370	0.328	0.329	0.348	-	0.348	0.357	0.364	0.371	0.378	Continuing	Continuing
9406: *Maintenance Data Warehouse*	27.188	11.002	10.171	4.461	-	4.461	7.635	7.224	6.353	6.479	Continuing	Continuing
9999: *Congressional Adds*	0.000	3.862	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.862

A. Mission Description and Budget Item Justification

2901 AAUSN IT

DEPARTMENT OF NAVY TASKING RECORDS AND CONSOLIDATED KNOWLEDGE ENTERPRISE REPOSITORY (DoN TRACKER)
Department of the Navy Tasking, Records and Consolidated Knowledge Enterprise Repository (DON TRACKER - formerly known as Enterprise Records and Task Management (ERTM)) is a single, auditable, compliant Records and Task Management process, implemented uniformly across all DON Divisions and Commands, and administered by DON/AA, to enable efficient and effective execution of Records Management (RM) and Task Management (TM) policy in compliance with statute.

ELECTRONIC PROCUREMENT SYSTEM (ePS)

FY18 funding increase supports Product Demonstration and Evaluation (PD&E) which was added to the ePS deployment strategy as a risk reduction methodology. The addition of PD&E has caused the scheduled award of the option to the single solution provider to shift 17 months to the right. ePS will award the PD&E multi-award contract in Fiscal Year (FY) 2018, moving the contract award of the option to the single solution provider to FY 2019.

ePS provides the Department of the Navy Solution for Electronic Contract Writing replacing the existing Standard Procurement System (SPS) and DoN Integrated Contracting Environment (DICE) capabilities and deficiencies. ePS aligns Contract Writing System (CWS) with Financial Improvement Audit Readiness requirements mandated by Congress and the Department of Navy's goal for an auditable link between financial management and contract writing system. It supports strategic sourcing and seamless exchange of data in addition to evolving to meet changing requirements. The improved capabilities will meet emerging data standards

Procurement Data Standards/Procurement Request Data Standards (PDS/PRDS), in addition to complying with Office of the Secretary of Defense (OSD) Clause Logic Service. ePS meets the intent of the National Defense Authorization Act of 2013 by providing an electronic means to award contracts.

NMCI ENTERPRISE SERVICE TOOLS (NEST)

The NEST is comprised of the NMCI Enterprise Tool (NET) and Requirements to Award Tool (RAPT) user interfaces, which enables the consumption of services from NMCI IT service contracts. RAPT manages the requirements approval process via workflows and stores associated contract documentation. NET serves as the sole customer interface to the order-to-payment process for NMCI. NEST and its associated interfaces manage the lifecycle for NMCI IT services.

DONAA IT

The Modernization Initiative includes multiple projects with RDT&E requirements: Multiple Threat Alert Center (MTAC), Data Modernization & Analytical Tools, Knowledge Network (K-Net), Consolidated Law Enforcement Operations Center (CLEOC), and Data Modernization of the Secretariat Automated Resources Management Information System (SARMIS). RDTEN funding will optimize DONAA's capability to make necessary improvements to various Secretariat systems. This modernization will ensure compliance with continued financial emerging requirements. Enhancement of financial auditability will be in compliance with DOD security system requirements.

MULTIPLE THREAT ALERT CENTER (MTAC)
The Post-Cole Secretary of the Navy Anti-terrorism/Force Protection Task Force identified the need for NCIS to enhance the Multiple Threat Alert Center (MTAC). The MTAC provides key anti-terrorism/force protection products in response to Fleet tasking and is critical to Fleet protection during current Overseas Contingency Operations (OCO). This project provides funding for the development of an IT system to track the movement of NCIS special agents deployed in advance of DoN in-transit units. The ability to track and communicate with these agents is necessary in order to forward threat data to those forward deployed agents and to task them to respond to emerging threats. Funding is required for equipment and contractor support to modify COTS software.

DATA MODERNIZATION & ANALYTICAL TOOLS
NCIS data collection, filtering, and analysis infrastructure is unable to handle the increased flow of terrorism investigative and threat reporting of the Post 9/11 era. NCIS must revitalize its infrastructure and its data and investigation management capabilities to effectively counter current terrorist threats. The three main components of this portfolio investment are data modernization, knowledge management, and investigation management.

KNOWLEDGE NETWORK (K-Net)
K-Net is a Data Modernization & analytical tool being developed and soon deployed that greatly enhances NCIS's technological arsenal. K-Net implements an integrated NCIS approach for identifying, capturing, evaluating, retrieving, and sharing all of NCIS's knowledge and expertise. To that end, K-Net is a knowledge management system that improves NCIS's ability to search, analyze, fuse, and distribute both national intelligence and law enforcement information. The envisioned end state for K-Net is a secure, intuitive, web environment that is the one stop shop where applications, data, and tools are easily accessible to all of NCIS users to effectively and securely fulfill their mission regardless of when and where they operate.

CONSOLIDATED LAW ENFORCEMENT OPERATIONS CENTER (CLEOC)
The Naval Criminal Investigative Service (NCIS) enhancement of CLEOC will enable meeting Law Enforcement (LE) reporting requirements, satisfy Congressional mandates for the Defense Incident-Based Reporting System (DIBRS) and improve functionality across the Naval criminal justice community.

DEPARTMENT OF THE NAVY CRIMINAL JUSTICE INFORMATION SYSTEM (DONCJIS)
The Naval Criminal Investigative Service (NCIS) is the Executive Agent (EA) for the Department of the Navy Criminal Justice Information System (DONCJIS). This system provides a cradle to grave criminal justice and law enforcement information system. The system enables multiple communities within the DON to share criminal justice and law enforcement information. Funding is required for contractor support to develop, test, train, deploy and implement this application.

2903 NAVAIR IT

JOINT CONFIGURATION MANAGEMENT INFORMATION SYSTEM (JCMIS)
The Joint Configuration Management Information System (JCMIS) Program is Department of Defense (DoD) standard software system for complete and integrated configuration management (CM) of weapon systems from acquisition to disposal. JCMIS efficiently manages all product structure data, including complex interrelationship between assemblies and subassemblies, technical documentation and the parts that comprise the item. JCMIS is designed to manage and control configuration data to support the DoD business processes. Accurate, complete and accessible configuration data is critical to the successful operations of DoD weapon systems or tracked assets. Mission readiness and operational capabilities are enhanced by JCMIS, as instant consistent integrated configuration data is readily available to operators, maintainers and logistics personnel. This system is a CM tool available DoD wide to support all potential customers. JCMIS provides users with a common database infrastructure to ensure compatibility, quality, and consistency of CM processes and provides configuration managers and analysts the validated CM information necessary for accurate maintenance, spare procurements, reliability and safety analysis, and mission readiness. Funding is budgeted to support the services of re-hosting and testing of COTS upgrades to ensure objective performance of JCMIS is achieved.

TASK FORCE CYBER AWAKENING (TFCA)
Cyber Warfare consists of many different aspects to include sabotage of our weapon systems, networks as well as enablement of missions. Nation and non-nation state actors are acquiring and employing more advanced cyber-attacks in order to exploit our networks and aviation systems challenging our technological edge. The threats and capabilities are real and range from exploiting capabilities, overloading weapons systems and logistics supply chains, to jamming signals or taking control of weapons systems. We must defend against adversarial cyber-attacks while contributing to the exploitation of cyber warfare capabilities.

To meet these challenges and address the Chief of Naval Operations priorities and tasking, these research and development efforts are specifically focused on Naval Air Systems Command weapon or control systems and programs to ensure warfighting effectiveness as part of integrated / multi-platform kill chains. These research and development efforts will strengthen our cyber posture by developing research, development, test and evaluation capabilities and solutions to deter, detect, and mitigate cyber threats and safeguard classified naval aviation systems and platforms from "cradle to grave." These solutions will be integrated into the acquisition of weapons systems to enhance security, increase lethality, and improve resiliency in the expected operational environments. Our weapon or control systems are unique in the

aforementioned environments and mission, but also in the presence of numerous non-traditional access points and trusted cyber relationships required for operational environments.

DIGITAL THREAD (DT)
Digital Thread (DT) is digital process integration with complete, secure and authoritative data. DT integrates the product life cycle, and includes all the processes that are needed to design, develop, test, produce, and support a product. By connecting these processes, and using a standardized set of digital tools and data, the DT accelerates the product development cycle and lowers costs and for support and new capability integration.

2904 NAVSEA IT

This program includes the funding for Information Technology (IT) support at NAVSEA for the development, support, and sustainment of maritime shore maintenance and includes multiple modernization efforts to insure effectiveness of Fleet maintenance systems as part of the current Navy Maritime Maintenance Enterprise Solution (NMMES). These efforts include retirement and/or replacement of costly legacy systems, transition planning and systems engineering for integration with national and enterprise interim and future solutions. These efforts align with direction to insure that proposed interim solutions support a planned, single maintenance solution end state, as well as direction to align with data center consolidation plans proposed across the FYDP. It includes the modernization of Naval Shipyard and Regional Maintenance Centers' Maintenance, Repair and Overhaul (MRO) production tools. This includes modifications/enhancements to Shipyard IT systems, such as Advanced Industrial Management (AIM); Project Scheduling and Sequencing (PSS); Workload and Performance Systems; the COST and MAT systems, and other solutions such as the Electronic Technical Working Document (eTWD) Initiative. The goal of PMO-IT is to provide modernization, migration and consolidation of obsolete legacy systems to the next generation of centrally hosted tools supporting Fleet Maintenance and national systems for the Navy.

2905 BUPERS IT

The increase in the FY18 profile for 2905 stems from the decision to invest in programs that directly align with the Sailor 2025 vision. The 2905 increases are tied directly to the Sailor 2025 pillars calling for modernization of the personnel system and transition to ready, relevant learning. The most significant spike stems from NSIPS, which in FY18 will complete its acquisition processes and award its first task order for Pay Modernization (PayMod), and also includes an add in support of the DoD Force of the Future for a Navy AC/RC Permeability Solution to; (1) extend the reach for soliciting candidates for Navy jobs, (2) streamline the internal processes and supporting technologies to ensure timely payment for personnel who transition between AC, RC, Government civilian or contractor jobs, and (3) improve the Navy's ability to support Component Commanders with rapid requirements posting and talent acquisition for emergent needs. The rest of the increase is largely due to the increase in the Learning Management System - Distance Learning (LMS-DL) program to transition the Collaborative Learning Environment Product from a limited prototype implementation to full production capability.

BILLET BASED DISTRIBUTION (BBD)

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605013N *I Information Technology Development*

BBD increase in FY18 is a Sailor 2025 initiative aimed at modernizing distribution and order writing systems. The effort begins functional work and follow-on development to collapse NROWS, NMCMPS, EAIS, and OAIS into a single distribution system. The objective of BBD is to increase personnel readiness, improve fit and provide clear visibility to the impact on mission readiness at the billet level. BBD will facilitate maximizing the contributions of every member of the Navy workforce by delivering competency-based career paths.

LEARNING MANAGEMENT SYSTEM - DISTANCE LEARNING (LMS-DL)

LMS-DL increase in FY18 is a Sailor 2025 initiative supporting ready relevant learning, with a focus to align Navy learning, create a career learning continuum, and leverage evolving technologies to expand learning solutions when and where the Sailor needs them. The collaborative learning environment (CLE) is a key component within the learning IT strategy that leverages Commercial-Off-the-Shelf products to integrate the CLE with intelligent tutors, a multi-purpose reconfigurable training system (MRTS), electronic classrooms (ECR), trainers and labs, interactive multimedia instruction (IMI), instructors, and a virtual environment. The increase in FY18 is to transition the pilot capability from FY17 into a production capability.

As part of Sailor 2025 holistic IT approach, ready & relevant learning requires the development of a Learning Management System that permits:

(1) Mobile & flexible delivery of modular training to the sailor
(2) Synchronization of work requirements with learning modules to ensure proper training is delivered at the right time

This funding will develop and deploy new technologies for modularized training in fleet concentration areas to support the continuum of learning. This includes:

(1) Development, modification or replacement of the current LMS platform
(2) Integration of Manpower, Personnel, Training and Education (MPTE) management tools to support end to end business processes (billet information, assignment, distribution, student management, learning management, personnel information, advancement) that will be impacted by changes to learning delivery and career profiles via Progressive NECs (e.g. TFMMS,NSIPS, Learning Assessment System, Navy Training Management Planning System) .

The Learning Management tools and supporting IT infrastructure must also be modified to support management of training into the Delayed Entry Program, the growing use of demonstration videos, social media, student and learning management for MPTE mobility efforts, gaming and simulation technology as it is brought on-line.

LMS-DL will also introduce the Learning Continuum Pilot, a risk reduction effort that develops proof of concept alignment of sailor training requirements with learning content delivery.

MY NAVY PORTAL (MNP)

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605013N *I Information Technology Development*

MNP is building an integrated web portal that consolidates the Navy's Human Resource portals, knowledge, and applications into a single and simplified user experience. Through the use of a multi-phased development approach, MNP will provide an intuitive self-service single point of entry for Sailors to view and manage their personnel and career information. MNP provides Active and Reserve Sailors with personalized interactive experiences and allows access to relevant information including learning content, human resource applications, and career business processes.

MNP Phase 2C continues to mature eleven Career Life Event (CLE) capabilities. Phase 2C continues requirements refinement work with key Fleet stakeholders and integrates or develops the identified CLEs.

My Navy Portal may address previously deferred requirements from prior phases. Should MNP exceed schedule/delivery, planned follow-on phases or activities may be accelerated.

ANALYSIS OF ALTERNATIVE/ECONOMIC ANALYSIS (AOA)
The Navy will conduct multiple AoAs to analyze viable alternatives in order to determine the most efficient and effective solution to address the modernization of elements of the Navy's Manpower, Personnel, Training and Education (MPTE) IT portfolio. AOA will assess operational effectiveness, suitability, and costs of non-tactical systems to meet emerging capability requirements.

NAVY STANDARD INTEGRATED PERSONNEL SYSTEM (NSIPS)

NSIPS increase in FY18 is aligned with the Sailor 2025 initiative to modernize personnel systems. The substantial increase is attributed to the planned start of the Pay Modernization (PayMod) program, and also includes an add in support of the DoD Force of the Future for a Navy AC/RC Permeability Solution to; (1) extend the reach for soliciting candidates for Navy jobs, (2) streamline the internal processes and supporting technologies to ensure timely payment for personnel who transition between AC, RC, Government civilian or contractor jobs, and (3) improve the Navy's ability to support Component Commanders with rapid requirements posting and talent acquisition for emergent needs.

NSIPS facilitates the Navy's portion of the largest Federal PeopleSoft Human Resources implementation, providing the Navy with a systematic modernization of our web-based pay and personnel system - both afloat and ashore. NSIPS collects, validates, processes and transfers the data necessary to ensure accurate and timely pay and maintenance of personnel records.

Pay Modernization (Pay Mod) will integrate the PeopleSoft Global Payroll solution with Navy Standard Integrated Personnel System (NSIPS) to provide an integrated Personnel and Pay solution for the Navy. Pay Mod will improve efficiency by eliminating current Defense Joint Military Pay System (DJMS) workarounds, improve business intelligence by providing real-time access to pay data, and improve auditability by having authoritative data in an integrated personnel and pay capability. Pay Mod is a solution to make more efficient use of military member time and funding for pay of active and reserve personnel.

Determining the retirement eligibility for Navy active duty service with both Active Component (AC) and Reserve Component (RC) time is complicated by the fact the computation has to be performed manually and requires consultation with numerous data sources. Current solutions make it difficult to account for who is on active

duty at any point in time and time-in-grade calculations for Selected Reserve (SELRES) personnel. Limitations in both payroll processes and systems induce a lapse between orders to effect change in status. SELRES personnel gained to Active Duty Special Work (ADSW) incur a delay in pay stemming from issues with loss/gain timing in systems. SELRES personnel who re-enlist while on active duty orders are not retained when transitioning back to SELRES, and there is no retention of active duty Career History for Reserve personnel. The Navy AC/RC Permeability Solution will be included in the Manpower, Personnel, Training and Education (MPTE) Transformation effort to leverage data in the authoritative data environment, modernize personnel and pay systems, and provide modern commercial solutions to; (1) extend the reach for soliciting candidates for Navy jobs, (2) streamline the internal processes and supporting technologies to ensure timely payment for personnel who transition between AC, RC, Government civilian or contractor jobs, and (3) improve the Navy's ability to support Component Commanders with rapid requirements posting and talent acquisition for emergent needs.

NAVY MANPOWER REQUIREMENTS SYSTEM (NMRS)

NMRS will modernize obsolete software and incorporate a wide array of enhancements (expanded capabilities based on sponsor's approved Functional Requirements Document) of new capabilities in support of Manpower Requirement efficiencies. Should NMRS deliver early, planned follow-on phases may be accelerated.

NMRS is a key tool which Navy manpower managers rely on to set, implement, and execute manpower requirements. Recommendations for improving data bases and the Navy's mobilization capacity rely on NMRS to make strength determinations. The planned effort also includes technical evaluation and integration of products produced by the Simulation Toolset for Analysis of Mission, Personnel and Systems (STAMPS) program.

RISK MANAGEMENT INFORMATION (RMI)
The RMI program is a consolidation of DON risk management requirements into a single Program of Record (POR) to provide modern safety reporting and management capabilities for both active and reserve Navy and Marine Corps commands. RMI enables agile responses to business rule changes, automation of routine actions, improved data integrity, and facilitates self-service for organizations and individuals.

RMI is being developed in three increments of capabilities: Streamlined Incident Reporting (SIR), Safety Program Management (SPM), and Analysis & Dissemination (A&D). A fourth requirement, Single Point of Entry (SPOE), will be accomplished as part of the development of the three RMI increments since each will be built on the same Commercial Off The Shelf (COTS) platform. Each of these capabilities will be acquired as individual Abbreviated Acquisition Programs using an incremental development approach for reengineered business processes, while consolidating five legacy systems [Web-Enabled Safety System (WESS), Enterprise Safety Application Management Systems (ESAMS), Portsmouth Occupational Accident and Illness Reporting System (POAIRS), Medical Mishap and Compensation (MMAC), and Injury Tracker (INJTRK)].

AUTHORITATIVE DATA ENVIRONMENT (ADE)

ADE increase in FY18 is a Sailor 2025 initiative aimed at transitioning the current project based ADE into a full enterprise solution that is based on modern IT service models and cloud hosting technology. This specific increase will advance data analytics and visualization capabilities, and add common platform services in a big data

environment that is consistent with private industry. This acceleration toward a true Navy-wide personnel authoritative data environment is a transformational increase in capability for decision support and improving personnel readiness.

As part of the Sailor 2025 strategy, the Chief of Naval Personnel has directed an acceleration of expansion and development of the ADE and improvements in making MPTE data more available to commanders, sailors, business owners and MPTE and fleet executive leadership. The ADE provides infrastructure, operations and sustainment of the Navy MPTE Authoritative Data Warehouse(ADW), enterprise service bus, and web support services.

The capabilities delivered by this funding includes the following:
(1) Completed "golden record" expansion increments
- Data quality
- Governance
- Security
- Data standardization

(2) Increased capabilities for MPTE supply chain & business operations
- Data discovery
- Advanced visualization tools
- Predictive analytics

(3) Enhanced architecture to support unstructured data and "big data" analytics
(4) Improved support for future identity management & access for mobile device capability

APPLICANT RELATIONSHIP MANAGEMENT (ARM)
ARM provides automated support of the management of recruiting information. ARM enables all levels of recruiting to have real-time access to timely and accurate information. ARM provides managers with decision-making support by consolidating Navy Recruiting Command (NRC) legacy application systems. The complete ARM Systems Dev/Mod effort will incorporate biometrics and paperless implementation across all lines of business systems to gain additional efficiencies.

Included in the ARM program is the Self Service Accessions Application (SSAA). Phase II of this effort will build the SSAA application into the ARM system. SSAA is a mobile device-based software application. SSAA supports a change in the NRC business processes from a recruiter-driven business model to an applicant self-service business model. This "app" will be used by applicants to collaborate with recruiters anytime & anywhere to more efficiently and effectively navigate the recruiting process.

3167 JOINT TECHNICAL DATA INTEGRATION (JTDI)

Funding supports the evaluation, testing and integration to develop a JTDI Commercial-Off-The-Shelf (COTS) solution for installation on a Carrier (CV) and Amphibious Assault (L) class ships and up to 104 Navy/Marine Corp aviation activities. JTDI is a digital technical data access, delivery and local O&I level library management toolset and telemaintenance collaboration process enabler. It improves accuracy and timeliness of technical manual and other technical data delivery and minimizes

the Fleet's library management burden. JTDI reduces maintenance work hours with saving Return on Investment (ROI) of 2.5:1. It facilitates the transition of the Joint Distance Support and Response (JDSR) Advanced Concept Technology Demonstration (ACTD) for telemaintenance and provides for process efficiencies to support ongoing Aviation Fleet Technical Representative reductions.

MARINE AVIATION LOGISTICS ENTERPRISE INFORMATION TECHNOLOGY (MAL-EIT)
Funding supports the evaluation, development, testing and integration of software and hardware solutions across all US Marine Corps Aviation activities to be used in the planning and execution of geographically distributed, expeditionary Aviation Logistics (AVLOG) chains in support of deployed USMC Air Combat Element operations. The Marine Aviation Logistics Enterprise Information Technology (MAL-EIT) Program is one of four programs contained within the Marine Aviation Logistics Support Program (MALSP) modernization program known as MALSP II. Legacy MALSP is nearly 25 years old and grossly inadequate in IT capability to meet the informational, planning, and C2 needs of a dynamic, geographically distributed nodal AVLOG system. MAL-EIT is a Defense Business System Abbreviated Acquisition Program that will develop and deliver the required IT capability necessary to eliminate the IT related gaps existing in the legacy MALSP.

3185 JOINT AIR LOGISTIC INFORMATION SYSTEM (JALIS)

JALIS is an operational scheduling and aircraft management system that facilitates real-time data analysis. JALIS is a critical element in the management of DoD air logistics assets. JALIS allows:

(1) DoD Service Personnel to submit airlift requirements for DoD Personnel and cargo
(2) Air Logistics Flying Units to communicate their aircraft availability in a real-time graphic display
(3) Designated Scheduling Organizations to compare airlift requirements with available aircraft
(4) Designated Scheduling Organizations to create mission assignments

JALIS informs applicable users of mission details and modifications by using a combination of system displays and email updates. JALIS is geographically distributed and has a user base in excess of 4,000 members. JALIS facilitates the movement of thousands of DoD Personnel and tons of cargo annually in support of the following:

(1) Navy Unique Fleet Essential Airlift
(2) Army's Operational Support Airlift Agency (OSAA)
(3) United States Transportation Command (USTRANSCOM)
(4) United States Marine Corps (USMC)

9406 MAINTENANCE DATA WAREHOUSE

Aviation Data Warehouse Decision Knowledge Programming for Logistics Analysis and Technical Evaluation (DECKPLATE) - The development of the DECKPLATE program is the next generation data warehouse for aircraft maintenance, flight, and usage data. It provides a web-based interface to a single source of information currently being stored in multiple Naval Aviation Logistics Data Analysis systems. Through the use of analysis, query, and reporting tools the user has the capabilities

to effectively obtain readiness data in a near real-time environment, as well as providing historical data for long range planning, trend analysis and records analysis, records reconstruction, and compliance with technical directives. DECKPLATE supports the mission of the warfighter who requires a single source of near real-time aviation data in which to base critical readiness decisions. This requires collecting data from authoritative sources into a data warehouse. Because the warfighter only needs to access one database, the time consuming task of collecting various pieces of data from various sources will be reduced and ultimately eliminated. This improves data quality because it reduces the possibility of two systems providing identical data elements, but slightly different data. Data availability is improved through continuous near real-time feeds from the data sources, giving the warfighter the most current information to base decisions. In addition, this also accomplishes a reduction in legacy systems mandated by Office of the Chief of Naval Operations. DECKPLATE manages total inventory for two major categories of assets, Aircraft and Engine/Propulsion Systems/Modules (EPSMs).DECKPLATE is comprised of the Aircraft Inventory and Readiness Reporting (DECK-AIRRS) and the Engine Transaction Reporting (DECK-ETR) subsystems which provide the complete lifecycle for aircraft and Engine/ Propulsion System/Modules (EPSMs). Both DECK-ETR and DECK-AIRRS are undergoing a FISCAM assessment (FY16) and audit (FY17) and are undergoing review for designation as the Accountable Property System of Record (APSR) for aircraft and uninstalled engines.

CONDITION BASED MAINTENANCE PLUS (CBM+)
Through automated analysis and decision making processes, the CBM+ Initiative provides Naval Aviation Enterprise with common enabling capabilities which deliver timely data-driven decisional information to optimize aircraft availability and materiel readiness by incorporating health and usage leading indicators into the failure mode mitigation process, enabling the Warfighter to more efficiently meet mission requirements. The CBM+ Initiative increases readiness by streamlining maintenance processes, provide the sustainment base with timely, actionable logistics data not previously available, and enable engineers and acquisition professionals to support system improvements based on CBM+ acquired data results. CBM+ provides the enabling solutions needed to extend the life of current and new acquisition aircraft, realizing savings from reductions in field (organizational and intermediate) maintenance actions, reduced functional check flight hours, mishap mitigation, and reduced parts usage.

INTEGRATED LOGISTICS SUPPORT MANAGEMENT SYSTEM (ILSMS)
The development of the ILSMS program is the next generation analytical tool set for Unit, Aircraft, Engines, Component Readiness and Cost metrics. It will be a web-based tool that will provide the user with validated and aggregated data. ILSMS provides analysts with the means to pull data on type/model/series (TMS) readiness, run detailed component analysis, manage aircraft life by bureau number, request lists of TMSs' top degraders, model the impacts of degraded components on readiness and cost, generate production scenarios, and manage the incorporation of technical directives. ILSMS institutionalizes a data analysis process that is repeatable and establishes a common understanding of readiness and cost degraders among its users. This is also the foundation for working with provider organizations to establish metrics, actionable mitigation plans and milestones. ILSMS will give its users a one stop shop to proactively identify readiness and cost degraders quickly with a consistent methodology across all TMS thus providing a standardized tool to assist programs in reducing total ownership costs.

9999 CONGRESSIONAL ADD

Congressional Add (Project C286): The enterprise Product Lifecycle Management (ePLM) Integrated Decision Environment (IDE) will serve as a central knowledge repository for process and product evolution and history. It will promote integration, data exchange, and analysis among all business users and information systems that will interact with any Weapon System Configuration Item (CI) during its lifecycle. ePLM IDE enables product support providers and the warfighter to maintain weapon

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
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systems in the most ready condition at the lowest lifecycle cost by linking readiness and cost impacts with every decision. The ePLM IDE will effectively address each weapon system program requirement for an IDE as stated in the Defense Acquisition Guidebook.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	85.816	97.066	111.160	-	111.160
Current President's Budget	77.895	97.066	152.977	-	152.977
Total Adjustments	-7.921	0.000	41.817	-	41.817
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-5.080	0.000			
• SBIR/STTR Transfer	-2.842	0.000			
• Program Adjustments	0.000	0.000	41.412	-	41.412
• Rate/Misc Adjustments	0.001	0.000	0.405	-	0.405

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2016	FY 2017
Project: 9999: *Congressional Adds*		
Congressional Add: *Information Technology Development Increase*	3.862	0.000
Congressional Add Subtotals for Project: 9999	3.862	0.000
Congressional Add Totals for all Projects	3.862	0.000

Change Summary Explanation

Technical: Not applicable.

Schedule Changes: 3167, Marine Aviation Logistics Enterprise Information Technology (MAL-EIT) Schedule verbiage updated to depict MAL-EIT releases as 1.0. 2.0, and 3.0 vice Increments 1, 2, and 3 to conform to current developer naming conventions

Schedule Changes: 9406, Integrated Logistics Support Management System, (ILSMS)- System Development: Software Development: V2.2.2 ILSMS Power and Propulsion Software Development will change from 1st-2nd Qtr of FY15 to 4th Qtr FY16 through 2nd Qtr of FY17. Test and Evaluation: ILSMS V2.2.2 Power and Propulsion Test and Evaluation will change from 2nd Qtr FY15 to 4th Qtr FY16 through 2nd Qtr of FY17, and Deliveries will change from 4th Qtr FY16 to 3rd Qtr FY17. The previous contract was terminated due to performance issues. A new contractor has been identified and efforts can now begin the 4th Quarter of FY16.

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Funding increases addressed within individual projects.

The FY 2018 funding request was reduced by $22.030 million to account for the availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0605013N / *Information Technology Development*				Project (Number/Name) 2901. / *AAUSN IT*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
2901.: *AAUSN IT*	26.147	20.374	15.177	17.530	-	17.530	31.673	24.250	4.579	4.633	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

DATA MODERNIZATION & ANALYTICAL TOOLS: The Secretariat Automated Resources Management Information System (SARMIS) is a financial tool used by the Secretariat to formulate, execute, and report changes to organizational resources. DON/AA employs this system to support financial and resource decisions for the entire Secretariat. SARMIS produces budget materials and analysis, as well as generating allocation data. In addition, SARMIS contains organizational manpower data that assists our leaders in making necessary personnel decisions for the Secretariat. This RDTEN funding will optimize DON/AA's capability to make necessary modernization to various Secretariat systems in order to ensure compliance with FIAR and other financial emerging requirements of a clean financial statement. This modernization will provide transparency and enhance the level of financial auditability in the system. RDTEN funding is required to support systems technology upgrades and DOD security system requirements.

CORB IT System Modernization:
The CAPS-II programs is used by the Navy Clemency and Parole Board (NCPB) and the Combat Related Special Compensation Board(CRSC) to process and adjudicate approximately 3,200 cases per year. The current system defects have resulted in additional man-hours and reduced reporting functionality. This has created a longer manual process, and hinders adequate and accurate statistical data from being collected or retrieved. RDTEN funding will be used to modernize the CAPS-II program in order to meet current IT standards and enhance system capabilities. The system is currently non-serviceable and is not aligned with NCPB and CRSC current mission requirements.
DON TRACKER

Department of the Navy Tasking, Records and Consolidated Knowledge Enterprise Repository (DON TRACKER - formerly known as Enterprise Records and Task Management (ERTM)) is a single, auditable, compliant Records and Task Management process, implemented uniformly across all DON Divisions and Commands, and administered by DON/AA, to enable efficient and effective execution of Records Management (RM) and Task Management (TM) policy in compliance with statute.

ELECTRONIC PROCUREMENT SYSTEM (ePS)

The electronic Procurement System (ePS) is the Department of the Navy's (DON) End-to-End (E2E) Contract Writing System (CWS). It will provide the Navy and Marine Corps contracting community with a full contract writing management capability and facilitate integration with federally mandated systems, DON financial systems, and industry. The ePS will utilize Department of Defense (DoD) standards and support auditability. The ePS will address existing CWS challenges including outdated architecture, limited capabilities, scalability concerns, and existing legacy systems.

Full deployment of the ePS ensures compliance of the DON's contracting abilities with the following legislative mandates: the writing and management of all contracts must now occur in congressionally approved computer systems (Section 862 of the National Defense Authorization Act (NDAA) of 2013); the central management and

oversight of all DoD business (10 U.S. Code (U.S.C.) Section 2222); and all contracting actions must be fully auditable and traceable (Section 1003 of the NDAA 2010 & Office of the Secretary of Defense (OSD) Financial Improvement and Audit Readiness (FIAR) Guidance).

The ePS will use DoD data exchange capabilities (e.g.; Procurement Data Standard (PDS) and Purchase Request Data Standard (PRDS)) in order to achieve standardized data interoperability with external systems. The Navy Enterprise Service Bus (NESB) serves as the hub to relay procurement data to various finance and other systems of record, such as Navy Enterprise Resource Planning (Navy ERP), Standard Accounting & Reporting System (STARS) and Standard Accounting Budgeting & Reporting System (SABRS).

In FY18, the Program will continue systems engineering and interface mapping efforts, as well as support of software hosting and the start of the Limited Deployment (LD) phase of the ePS program. The Product Demonstration and Evaluation (PD&E) process will also be initiated to evaluate performance and usability of EPS product.

The result of successful ePS implementation will be a contracting workforce that issues accurate and timely contracts in a standard format that comply with all DoD/ Federal laws, regulations, and policies.

NMCI ENTERPRISE SERVICE TOOLS SET
The NMCI Enterprise Service Tools (NEST) is the NMCI IT service management system that supports the Navy IT service lifecycle business workflow. The NEST currently is comprised of two government owned tools, the NMCI Enterprise Tool (NET) and the Requirements to Award Process Tool (RAPT), which enables and manages the business workflow. NET is a custom .NET application that has been built and maintained by the DON to support ordering of IT services. RAPT manages the requirements approval process and stores supporting documentation for previously unpriced line items. RAPT provides NET with relevant identification information for the new orderable solution, which supports the creation of orderable services. NET serves as the single point of entry for lifecycle management of IT services on the NMCI network.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: CORB IT System Moderization	0.500	0.500	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The Secretariat has numerous requirements to combat cyber security and improve efficiencies. Funding will be used to support the mission of the Combat Related Special Compenstation (CRSC) and the Navy Clemency and Parole Board (NCBP). Modernization of the CAPS-II program will enable the CRSC and NCBP to meet current IT standards and improve their record processing cycle.					
FY 2016 Accomplishments: Funding will support the modernization of the current system used by Navy Clemency and Parole Board(NCPB) and the Combat Related Special Compensation Board(CRSC) to process and adjudicate approximately 3,200					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
cases per year. Fufilling this requirement aligns with the Department of Navy's objective to "Drive Innovation Enterprise Transformation" which will maximize Information Technology Efficiencies. ***FY 2017 Plans:*** Continue FY2016 modernization effort. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Modernization - Secretariat ***Articles:*** ***Description:*** The Secretariat has numerous requirements to modernize its financial management system and portal applications. SARMIS will be updated from older technologies to include new FIAR and web based requirements. These upgrades are necessary to continue functionality of the system and ensures timely, accurate and efficient operation of the Secretariat's mission. ***FY 2016 Accomplishments:*** Continue with SARMIS modernization and design within the Navy Secretariat. ***FY 2017 Plans:*** Continue with FY2016 modernization and design effort. ***FY 2018 Base Plans:*** Continue with FY2017 modernization and design effort. ***FY 2018 OCO Plans:*** N/A	0.683 -	1.180 -	0.703 -	0.000 -	0.703 -
Title: Department of the Navy Tasking, Records and Consolidated Knowledge Enterprise Repository (DON TRACKER) ***Articles:*** ***Description:*** The DON TRACKER will streamline DON's electronic records and task management processes under a consolidated enterprise solution and will enable the DON to capture unstructured and structured electronic records, seamlessly manage tasking across and within all commands, ensure uniform metadata	0.422 -	0.595 -	0.465 -	0.000 -	0.465 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
of content, provide workflow-enabled reporting, and aid in compliance with all applicable laws, policies, and regulations. In addition, this will eliminate duplicative capabilities and result in cost-saving opportunities and efficiencies. The DON TRACKER solution will be extended to all authorized, shore and afloat-based users across the DON enterprise, including the Continental United States (CONUS) and Outside the Continental United States (OCONUS) communities. ***FY 2016 Accomplishments:*** 1. Updated program to incorporate enhancements 2. Initiated development for SIPR component 3. Continued DON TRACKER development & operational testing (a) Tested software enhancements (b) Conducted operator testing for user validation 4. Further prioritize user needs and identify capability shortfalls ***FY 2017 Plans:*** 1. Continue Development of SIPR Component (a) Test and Fix Software (b) Conduct User Evaluation Testing 2. Provide Software Updates 3. Commence Development to Provide Afloat Capability ***FY 2018 Base Plans:*** 1. Conduct Production Readiness Review for DON TRACKER v1.4 2. Begin Deployment ***FY 2018 OCO Plans:*** N/A					
Title: NMCI Enterprise Service Tools (NEST) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:***	0.000 -	0.000 -	5.200 -	0.000 -	5.200 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 Base Plans:*** - Conduct configuration and development of NET Release 3.X to attain the following capabilities: integration with Defense Logistics Agency (DLA) and Defense Finance Accounting System (DFAS) via Global Exchange (GEX), invoicing and delivery request, and ONE-NET integration. - Conduct middleware analysis & implementation. - Conduct Central Data Repository (CDR) Integration Analysis & Implementation. - Conduct Integrated Solution Framework (ISF) Tools Requirement Analysis & Implementation. - Conduct DFAS Auditability Analysis & Implementation (Compliance and Continuous Improvement). - Reconfiguration of the NET for compliance with DFAS audit requirements, reconfiguration of the hosting environment from a service hosted enclave to a government approved hosting facility. ***FY 2018 OCO Plans:*** N/A					
Title: Electronic Procurement System (ePS) ***Articles:*** ***Description:*** Funding required for the Electronic Procurement System (ePS) to provide support for source selection, configuration, integration, testing, training, deployment and implementation of the system. ***FY 2016 Accomplishments:*** - Developed and received approval of the Capabilities Requirements Document (CRD), the Systems Engineering Plan (SEP), and the System Requirements Specification (SRS) that supported Gates 3 and 4, which provided Navy Leadership endorsement of the ePS SRS Development approach; endorsement of the ePS Test and Evaluation (T&E) and Sustainment strategies, approval to proceed to the ePS Systems Requirements Review, and endorsement for the program to proceed to the ePS request for proposal (RFP) Gate 5 review. - Began development of the following draft documents in support of Gate 5 review / RFP Release Decision: Cost Analysis Requirements Document (CARD), Acquisition Strategy/Acquisition Plan (AS/AP), Program Protection Plan (PPP) / Cyber Security Strategy (CSS), Test & Evaluation Master Plan (TEMP), Life-Cycle Sustainment Plan (LCSP), and the RFP Package. - Began data mapping efforts for Navy Enterprise Service Bus (NESB) interface to send committed Purchase Requisition (PR) data from Navy Enterprise Resource Planning (ERP) to ePS. - Received the NCCA Independent Cost Assessment (ICA) memo.	18.769 -	12.902 -	11.162 -	0.000 -	11.162 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Held Industry Day and created technical data repository (TDR) to share documentation with Industry					
FY 2017 Plans: - Continued NESB data mapping efforts required for ePS Limited Deployment, including sending committed Purchase Requisition (PR) data from additional financial systems (Navy ERP, IMPS, PR Builder, and Standard Accounting, Budgeting and Reporting System (SABRS)) to ePS; and sending award data from ePS to Navy financial systems (Navy ERP, IMPS and SABRS). - Drafted Memorandums of Agreement (MOA) between ePS and all interfacing financial systems. - Developed requirements for Navy ERP programming changes required for interfacing with ePS in support of NESB efforts. - Received required approvals at RFP release for the Acquisition Strategy / Acquisition Plan (AS/AP), the Test and Evaluation Plan (TEMP), the Life-Cycle Sustainment Plan (LCSP), the Program Protection Plan (PPP) and Cybersecurity Strategy (CS) and the Initial Economic Analysis (EA). - Updated the Systems Requirements Specification (SRS) - Completed the Navy Gate 5, indicating approval of the ePS RFP package and agreement on product affordability - Completed the DAB Planning Meeting, OIPT, DAB Readiness Meeting, and the Development RFP Release Decision DAB. - The Acquisition Strategy/Acquisition Plan (AS/AP) and the Acquisition Decision Memorandum (ADM) were signed by USD(AT&L). - Held additional Industry Day to share strategy changes with Industry. - Submitted the RFP Package for Navy Peer Review - Support for RFP Release and Source Selection proposal evaluations. - Continue system engineering efforts to include interface documentation coordination and development, refinement and elaboration of architectural artifacts. - Update required documents for Authority to Proceed (ATP) decision and contract award. - Begin Navy Enterprise Resource Planning (ERP) programming changes required for interfacing with ePS. - Complete the Navy Peer Review inclusive of comment adjudication and alignment with cybersecurity processes - Continue NESB data mapping efforts required for ePS Limited Deployment. - Set up government provided hosting environment for Product Development and Evaluation (PD&E) so that contractors are able to install, configure, and demonstrate their products once awards are made.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Complete Source Selection so that contractor proposals can be evaluated and award can be made, and award the contract to the contractor selected by the Source Selection Authority to begin limited deployment. - Continue NESB data mapping efforts required for ePS Limited Deployment, including sending committed Purchase Requisition (PR) data from additional financial systems (IMPS, PR Builder, and Standard Accounting, Budgeting and Reporting System (SABRS)) to the Electronic Procurement System (ePS); and sending award data from ePS to Navy financial systems (Navy ERP, IMPS and SABRS). - Continue implementation of Navy Enterprise Resource Planning (ERP) programming changes required for interfacing with ePS. - Continue Systems Engineering efforts including updating required documentation, updating architecture models, preparing for cyber security requirements, and developing required testing plans. - Data cleansing and logistics analysis in preparation for data migration from legacy systems into the new ePS solution to reduce the risk of data migration errors. - Continue Project Management efforts including source selection, implementation preparation, scheduling, configuration management, and updating required documentation. - Provide licensing for the required Architecture Tool. - Conduct the beginning of Limited Deployment (LD) for ePS including integration efforts, business process re-engineering, and system configuration. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	20.374	15.177	17.530	0.000	17.530

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 8106: *Command Support Equipment*	0.000	3.875	3.658	-	3.658	4.408	6.063	0.000	0.000	0.000	18.004

Remarks

D. Acquisition Strategy

The NMCI Acquisition strategy aims to shift the DON to a multi-vendor, multi-contract environment that aims to provide government-owned IT service lifecycle management. The NEST tools are currently being updated to incorporate enhancements that will enable to new environment.
MODERNIZATION - Contract will be awarded under a competitive, all source, RFP. NO ACAT

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The selected contractor must have knowledge of the existing information systems pertinent to the task. They must also have the corporate experience and a staff of knowledgeable personnel to provide the required services. The task will be monitored by the Contracting Officer Representative (COR), who reviews technical data submissions, system deliverables, and invoices to ensure acceptable contractor performance and scheduled deliveries.

CORB IT System Modernization:
Contract will be awarded under a competitive, all source, RFP. NO ACAT

DON TRACKER

As a general rule, IT development programs use an agile software development methodology therefore milestones, tasks and phases are often conducted in parallel vice sequentially.

This planned acquisition will be a Cost-Plus-Fixed-Fee (CPFF) single award Indefinite Delivery Indefinite Quantity (IDIQ) contract to a selected Vendor in support of sustainment, software development, legacy data transfer, and additional fielding of the DON TRACKER application.

ELECTRONIC PROCUREMENT SYSTEM (ePS)
The ePS program intends to award a 10-year hybrid contract to a single System Integrator (SI). The SI (Prime) will provide required software licenses and required activities for program management, maintenance, systems engineering, design and interface development, testing, deployment, training, and support documentation. This includes all efforts through Full Deployment (FD) and continued sustainment support during the 10-year period of performance.

The ePS will leverage Commercial Off-the-Shelf (COTS) products and capabilities, and is anticipated to consist of three components to achieve full end-to-end capability: 1) a COTS Contract Writing System (CWS) solution; 2) a COTS middleware interfacing capability, known as an Enterprise Service Bus (ESB); and 3) Gap-closure methodologies (e.g.; Business Process Management (BPM) tools, Business Process Re-Engineering (BPR), COTS updates, or a secondary COTS solution).

The ePS acquisition strategy has been revised to move the risk reduction Product Demonstration and Evaluation (PD&E) phase into source selection rather than after award. This updated strategy adjusted the anticipated award date to Q4 FY18, and is expected to reduce the risk associated with gap-closure and establish user buy-in and ownership of the solution.

NMCI ENTERPRISE SERVICE TOOLS (NEST)

E. Performance Metrics

Program cost, schedule and performance are measured using a systematic approach with approved programs and methods. The results of these measurements are presented to DON/AA management through a governance review board process on a regular basis to determine program effectiveness and to provide new direction as needed to ensure the efficient use of

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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resources. To monitor and manage the execution of projects in addition to other IT investments, management and governance boards review metrics and key performance indicators that are outlined in various plans. Some of the plans that expound on the data captured to attribute to performance measures include: Project Management Plan, Risk Mitigation Plan, Communication Plan, Procurement Plan, and a Certification & Accreditation Plan.
Other specific performance measurements include:
1. Actual versus planned project scope
2. Actual versus planned time schedule
3. Actual versus planned costs
4. Actual versus planned risks and the mitigation of those risks

CORB IT System Modernization specific performance measurements include:
1. CRSC processes and adjudicates approximately 2,600 cases per year
2. NCPB processes and adjudicates approximately 800 cases per year

DON TRACKER
PII-100% of flagged PII shall be protected
Automation-95% of requests will be processed using automated system without a manual workaround
Operational Availability-99% of transactions shall be resolved correctly per System Accuracy definition

ELECTRONIC PROCUREMENT SYSTEM (ePS):
Reliability:
(Threshold) Mean Time Between Failure (MTBF) >= 720 Hours (Hrs)
(Objective) Mean Time Between Failure (MTBF) >= 1080 Hrs

Operational Availability:
(Threshold) = 96% Including Scheduled Downtime
(Objective) = 99.5% Discounting Scheduled Downtime

Maintainability:
(Threshold) Mean Time to Repair (MTTR) <= 6.7 Hrs
(Objective) Mean Time to Repair (MTTR) <= 2.7 Hrs

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development (Modernization)	C/FP	CACI : Chantilly, VA	4.555	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Contractor Engineering Support (DONCJIS)	SS/T&M	Interimage Inc. : Manassas, VA	1.272	0.000		0.000		0.000		-		0.000	0.000	1.272	-
Software Development	C/FP	Dell Marketing LP : Round Rock, TX	1.938	0.000		0.000		0.000		-		0.000	0.000	1.938	-
Software Development (CLEOC)	C/FP	NSA : Various	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
Software Development (EPS)	TBD	NA : NA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
SYSTEM Moderization	WR	SPAWAYSYSCEN ATLANTIC : CHARLESTON, SC	1.151	0.683	Oct 2015	1.180	Oct 2016	0.703	Oct 2017	-		0.703	0.000	3.717	-
CORB SYSTEM Modernization	WR	SPAWASYSTEM : CHARLESTON, SC	0.000	0.500	Oct 2015	0.500	Oct 2016	0.000		-		0.000	0.000	1.000	-
DON TRACKER Engineering	C/CPFF	Progeny : Manassas, VA	4.750	0.422	Feb 2016	0.595	Feb 2017	0.465	Feb 2018	-		0.465	Continuing	Continuing	Continuing
ePS Data Transition Strategy	Various	NAVSUP BSC : Mechanicsburg, PA	1.502	0.000		0.100	Nov 2016	0.000		-		0.000	0.000	1.602	-
ePS NESB Data Mapping	C/FP	BOOZ ALLEN : Tysons Corner, Va	0.400	5.000	Dec 2015	1.629	Dec 2016	0.452	Dec 2017	-		0.452	Continuing	Continuing	Continuing
NESB Configuration and Validation	C/FP	SPAWAR : San Diego, CA	0.000	7.371	Apr 2016	0.000		0.000		-		0.000	0.000	7.371	-
Contract Writing System	C/FP	SPAWAR : San Diego, CA	0.000	0.000		0.000		4.000	Jul 2018	-		4.000	Continuing	Continuing	Continuing
NERP Interface Analysis	Various	SPAWAR : San Diego, CA	0.000	0.000		1.150	Mar 2017	1.000	Mar 2018	-		1.000	0.000	2.150	-
		Subtotal	16.068	13.976		5.154		6.620		-		6.620	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Acquisition Documentation (ePS)	C/IDIQ	MAGA : Washington, DC	1.734	2.000	Dec 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Cost Analysis (ePS)	C/CPFF	SPAWAR : San Diego, CA	0.641	0.404	Oct 2015	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering (ePS)	Various	SPAWAR : San Diego, CA/ Charleston, SC	3.986	3.478	Oct 2015	5.564	Oct 2016	2.020	Oct 2017	-		2.020	Continuing	Continuing	Continuing
Logistics Analysis (ePS)	Various	SSC LANT : Charleston, SC	0.788	0.416	Oct 2015	0.227	Oct 2016	0.230	Oct 2017	-		0.230	Continuing	Continuing	Continuing
Requirements Validation (EPS) - Small Business set aside	C/FFP	SPAWAR : San Diego, CA	1.500	0.000		0.000		0.000		-		0.000	0.000	1.500	-
Project Management/ Implementation	Various	Enterprise Horizion : San Francisco, CA	0.000	0.000		1.756	Nov 2016	1.780	Nov 2017	-		1.780	0.000	3.536	-
Engineering Services - Small Business set aside	Various	Bowhead : Alexandria, VA	0.000	0.000		1.561	Jun 2017	1.580	Jun 2018	-		1.580	0.000	3.141	-
DAU Support	Various	SPAWAR : San Diego, CA	0.000	0.000		0.000	Nov 2016	0.000		-		0.000	0.000	0.000	-
Testing and Validation/ Architecture Tool	Various	NSWC Dahlgren : Dahlgren, VA	0.000	0.000		0.050	Nov 2016	0.050	Nov 2017	-		0.050	0.000	0.100	-
System Engineering Support	C/CPFF	Deloitte : Rosslyn, VA	0.000	0.000		0.000		5.200	Nov 2017	-		5.200	Continuing	Continuing	Continuing
		Subtotal	8.649	6.298		9.158		10.860		-		10.860	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Testing Preparations (ePS)	C/FFP	SSC LANT : Charleston, SC	0.800	0.000		0.000		0.000		-		0.000	0.000	0.800	-
Software Hosting	C/FP	SPAWAR : San Diego, CA	0.000	0.000		0.815	Sep 2017	0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Testing	C/FP	OPTEVFOR : NORFOLK,VA	0.130	0.100	Jun 2016	0.050	Jun 2017	0.050	Jun 2018	-		0.050	Continuing	Continuing	Continuing
		Subtotal	0.930	0.100		0.865		0.050		-		0.050	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ePS Program Support	C/FFP	PEO EIS : Arlington, VA	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
		Subtotal	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	26.147	20.374		15.177		17.530		-		17.530	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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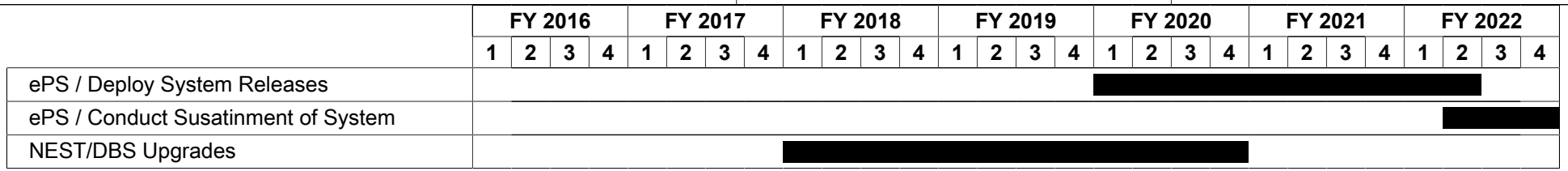

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2901.L12				
Technology Development (Modernization)	3	2018	4	2019
System Development & Demonstration (Modernization)	3	2018	4	2019
Production & Deployment (Modernization)	1	2016	4	2016
Operations & Support (Modernization)	1	2016	4	2016
System Development (Secretariat)	1	2018	1	2019
System Testing (Secretariat)	1	2016	1	2017
Deployment (Secretariat)	1	2016	1	2017
DON TRACKER System Enhancement Contract Award / Modification	2	2016	2	2016
DON TRACKER Development	2	2016	3	2018
DON TRACKER Critical Design Review	3	2016	4	2016
DON TRACKER Application Test Readiness Review	4	2016	1	2017
DON TRACKER User Acceptance Functional Testing	1	2017	2	2017
DON TRACKER Production Readiness Review	2	2018	3	2018
DON TRACKER Enhancement Deployment	4	2018	1	2019
ePS / Navy Enterprise Service Bus (NESB) Data Mapping, Validation and Testing	2	2016	3	2018
ePS / Request for Proposal (RFP)	2	2017	3	2017
ePS / Source Selection	3	2017	3	2018
ePS / Award the ePS contract	3	2018	4	2018
ePS / Conduct Limited Deployment	4	2018	1	2020
ePS / Deploy System Releases	1	2020	2	2022
ePS / Conduct Susatinment of System	2	2022	4	2022

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NEST/DBS Upgrades	1	2018	4	2020

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy										Date: May 2017		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0605013N / *Information Technology Development*				Project (Number/Name) 2903 / *NAVAIR IT*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
2903: *NAVAIR IT*	3.159	6.530	5.332	10.915	-	10.915	6.131	6.017	5.479	2.394	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

$5.8M increase in FY18 for Task Force Cyber Awakening to close funding gap for identified capabilities investments to assess, verify, validate, and mitigate cyber vulnerabilities with tailored solutions for aviation weapon systems programs and improve cyber security at control system entry points to enable mission assurance in cyber contested environments.

The Joint Configuration Management Information System (JCMIS): The JCMIS Program is DoD's standard software system for complete and integrated Configuration Management (CM) of weapon systems from acquisition to disposal. JCMIS efficiently manages all product structure data, including complex interrelationship between assemblies and subassemblies, technical documentation and the parts that comprise the item. JCMIS is designed to manage and control configuration data to support the DoD business processes. Accurate, complete and accessible configuration data is critical to the successful operations of DoD weapon systems or tracked assets. Mission readiness and operational capabilities are enhanced by JCMIS, as instant consistent integrated configuration data is readily available to operators, maintainers and logistics personnel. This system is a CM tool available DoD wide to support all potential customers. JCMIS provides users with a common database infrastructure to ensure compatibility, quality, and consistency of CM processes and provides configuration managers and analysts the validated CM information necessary for accurate maintenance, spare procurements, reliability and safety analysis, and mission readiness. Funding is budgeted to support the services of re-hosting and testing of Commercial off-the-shelf (COTS) upgrades to ensure objective performance of JCMIS is achieved. This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

Task Force Cyber Awakening (TFCA)- Cyber Warfare consists of many different aspects to include sabotage of our weapon systems, networks as well as enablement of missions. Nation and non-nation state actors are acquiring and employing more advanced cyber-attacks in order to exploit our networks and aviation systems challenging our technological edge. The threats and capabilities are real and range from exploiting capabilities, overloading weapons systems and logistics supply chains, to jamming signals or taking control of weapons systems. We must defend against adversarial cyber attacks while contributing to the exploitation of cyber warfare capabilities.

To meet these challenges and address the Chief of Naval Operations priorities and tasking, these R&D efforts are specifically focused on Naval Air Systems Command weapon or control systems and programs to ensure warfighting effectiveness as part of integrated / multi-platform kill chains. These research and development efforts will strengthen our cyber posture by developing research, development, test and evaluation capabilities and solutions to deter, detect, and mitigate cyber threats and safeguard classified naval aviation systems and platforms from "cradle to grave." These solutions will be integrated into the acquisition of weapons systems to enhance security, increase lethality, and improve resiliency in the expected operational environments. Our weapon or control systems are unique in the aforementioned environments and mission, but also in the presence of numerous non-traditional access points and trusted cyber relationships required for operational environments.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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Digital Thread - Digital Thread (DT) is digital process integration with complete, secure and authoritative data. DT integrates the product life cycle, and includes all the processes that are needed to design, develop, test, produce, and support a product. By connecting these processes, and using a standardized set of digital tools and data, the DT accelerates the product development cycle and lowers costs and for support and new capability integration.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: JCMIS Annual Software Release	0.418	0.716	0.624	0.000	0.624
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Re-baseline JCMIS Software to upgrade to latest version of Oracle, incorporate development efforts associated with COTS obsolescence and evolve an open standard interface to other systems.					
FY 2017 Plans: Re-baseline of JCMIS software to upgrade to latest versions of Cold Fusion and Oracle. Incorporate development efforts associated with COTS obsolescence and evolve an open standard interface to other systems. Maintain system compliance with Section 508 requirements. Constantly evolving threats, new vulnerabilities, and changing DON Cyber Security policy require increasingly strong efforts on behalf of JCMIS to ensure that system software and architecture remain secure. Continue generation of solutions and mitigation plans for any vulnerabilities identified during system assured compliance assessment solution scans. Continue monitoring for changes and compliance with applicable security technical implementation guided checklists and security content automation protocol results. Compliance with applicable information assurance updates including information assurance vulnerability alert, information assurance vulnerability bulletin, information assurance vulnerability technical, Microsoft, and supporting software updates. Generation of timely and efficient system and/or software solutions to assist with requests that may involve modification/update to system software/architecture.					
FY 2018 Base Plans: Continue development efforts associated with COTS obsolescence and evolve an open standard interface to other systems. Maintain system compliance with Section 508 requirements. Constantly evolving threats, new vulnerabilities, and changing DON Cyber Security policy require increasingly strong efforts on behalf of JCMIS to ensure that system software and architecture remain secure. Continue generation of solutions and mitigation plans for any vulnerabilities identified during system assured compliance assessment solution scans. Continue monitoring for changes and compliance with applicable security technical implementation guided checklists and security content automation protocol results. Compliance with applicable information assurance updates including information assurance vulnerability alert, information assurance vulnerability bulletin, information assurance vulnerability technical, Microsoft, and supporting software updates. Generation					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
of timely and efficient system and/or software solutions to assist with requests that may involve modification/ update to system software/architecture. ***FY 2018 OCO Plans:*** N/A					
Title: Task Force Cyber Awakening (TFCA)	5.825	4.616	10.291	0.000	10.291
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Develop unique tactical cyber solutions for customized control systems where solutions currently do not exist. Many of the traditional security measures are inappropriate or inadequate for use in control systems due to the presence of real time operating systems, latency sensitivity, and disconnected or intermittent connections to networks. Additionally, many control systems have access vectors, such as maintenance connections or RF apertures that may bypass the layered enterprise defenses typically viewed as the first lines of a layered defense. This R&D effort is a deliberate investment to develop tailored solutions for our control systems and improve the cyber security at control system entry points.					
FY 2017 Plans: Continue development of unique tactical cyber solutions for customized control systems where solutions currently do not exist. Many of the traditional security measures are inappropriate or inadequate for use in control systems due to the presence of real time operating systems, latency sensitivity, and disconnected or intermittent connections to networks. Additionally, many control systems have access vectors, such as maintenance connections or RF apertures that may bypass the layered enterprise defenses typically viewed as the first lines of a layered defense. This R&D effort is a deliberate investment to develop tailored solutions for our control systems and improve the cyber security at control system entry points.					
FY 2018 Base Plans: - Broad Agency Announcement (BAA) new awards / continuation of development/demonstration of cyber security solutions across 8 identified technology areas. - Augmentation and maturation of lab capabilities across multiple NAVAIR sites to conduct Cyber security RDT&E for NAVAIR programs. - Continued development and maturation of new customized tools, methodologies, and procedures for RDT&E of control system interfaces that tie to identified risk assessment capability gaps and emergent threats. This is a direct tie to ability to conduct penetration testing.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continued support of emergent FLTCYBERCOM TASKORDs requiring urgent development of customized control systems solutions for identified Fleet risks. - Increased FY18 Capability investment directly supports emergent intelligence, FCC TASKORDs, Blackbeard AAR, NDAA 1647, Aviation Resiliency and OSD DSB study. Without this capability investment the US Navy will continue to be vulnerable to attacks on its non-traditional systems (e.g., aircraft, weapons, radars, ALRE) and will result in significant residual risk to aviation combat systems. Broad Agency Announcements are in place to execute FY18 funding increases. ***FY 2018 OCO Plans:*** N/A					
Title: Digital Thread ***Articles:*** ***FY 2016 Accomplishments:*** Develop use cases and Cyber Security architecture assessment completed focused on industrial security approaches used in industry. The cyber security assessment includes prioritized demonstration plans for the Naval Aviation Enterprise Digital Thread environment. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	0.287 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	6.530	5.332	10.915	0.000	10.915

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Joint Configuration Management Information System (JCMIS) Program used Joint Logistics Systems Center (JLSC) funds to evolve JCMIS to Software Release 5.0. In June 1998 JCMIS was transferred to the Navy as executive agent and NAVAIR as program manager. Program Budget Decision 401 transferred joint funding

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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from JLSC to NAVAIR to continue evolving JCMIS. The JCMIS Program Manager continues to evolve the program to keep pace with cost, Military Standards, and evolving commercial standards. Various contractors using competitively awarded contracts have supported the program. Currently, Intergraph Corporation is the JCMIS integration contractor selected through a GSA contract.

Task Force Cyber Awakening (TFCA) - The TFCA strategy is in 3 concurrent steps:
1. Broad Agency Announcements (BAA) for resilient cyber warfare capabilities and control system solutions for NAVAIR Weapon Systems. Draft BAA delineating Naval Research Areas of Interest; Specific Areas of Interest; Technologies Being Sought; Proposal Submission; Proposal Abstracts; Full Proposal; General Information, and Evaluation Criteria.
The objective of the BAA is principally to orchestrate germane research and development to fill the gaps in cyber warfare capabilities for Naval Air Systems Command (NAVAIR) weapon systems, i.e., secure weapon systems able to survive and exploit cyber warfare. Areas of interest include but not limited to:
1) SWaP sensitive cyber resiliency for RTOS and aviation warfare environment
2) Access point identification, prioritization and defense
3) Cyber-Electronic Warfare convergent capabilities
4) Full acquisition cycle cyber security measures
5) Cyber test, inspection, incident response and training tools
6) Cyber warning systems
7) Cyber fault, risk and threat assessment methodologies

2. Stand-up Advanced Cyber Lab (ACL)
Achieve capability to respond to cyber incidents, conduct federated avionics penetration tests in support of cyber risk assessments and develop control system solutions for NAVAIR weapon systems and acquisition programs. Stand-up capability to assess BAA solutions. Acquire delineated specialized equipment, software tools, space, power, cooling, and security.
1) Secure Messaging - Cryptography, Steganography, etc.
2) Embedded Operating System Threat Assessment, Software Reverse Engineering, Federated Penetration Testing of Custom Control Systems
3) Advanced Anti-tamper, Digital Forensics
4) Microelectronics Reverse Engineering
5) Capabilities in response to Denial of Service, Precision Direct Attack/ Root Kits, Interdiction / Data in transit and Infrastructure / SCADA attacks.
6) Portable Assessment and Test

3. Organic Cyber Solutions for NAVAIR Customized Control Systems
Project investigation and development or tools and tailored solutions for our control systems and improve the cyber security at control system entry points will be completed. Areas discovered include but are not limited to:
1) Intrusion Detection / Prevention Systems (IDS/IPS) for Real Time systems
2) Live-CD boot
3) Out of Band Monitoring & Authentication

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4) Weapon System of Systems Architecture tools
5) Avionics Fuzzing
6) Federated Penetration Testing Tool Set & Non-Destructive Inspection Tool
7) Dynamic Network Maneuvering
8) Weapon System Side Channel Analysis

Digital Thread - Digital Thread Cyber Security Architecture and Strategy
1) Develop Cyber Security architecture for NAE Digital Thread including detailed demonstration plan
2) Execute cyber security demonstrations for NAE Digital Thread including COMFRC, Logistics IT, PMAs

E. Performance Metrics

Joint Configuration Management Information System (JCMIS) - Milestone C Spiral Development:
1. During the life of the contract verify conformance with agency specific information processing standards and functional requirements. Prior to delivery of enhanced software, demonstrate the operational capability of the system software. Functionality of the software must meet required systems architecture and processing capabilities. All requirements mandated by law or regulation must be 100% compliant. Independent Verification and Validation will be used for testing new releases of software to determine that previous functionality is maintained. Customer satisfaction will be measured through limited validated customer complaints, feedback, and surveys.

Task Force Cyber Awakening (TFCA):
1. Establish Broad Agency Announcements (BAA) for Resilient Cyber Warfare Capabilities for Naval Air Systems Command Weapon Systems: Receive responses that address at key areas of interest.
2. Stand-up Advanced Cyber Lab: Operating capability workstations and inter agency task team.
3. Organic Cyber Solutions for NAVAIR Control Systems: Complete all projects.

Digital Thread:
During execution of the funding the following will be used to validate the performance:
1) Contract performance to plan and on time delivery of all contract deliverables
2) Completion of NAE Digital Thread environment Standup FY16
3) Execution of NAE Digital Thread Demonstrations
4) Execution of Digital Thread Cyber Security architecture demonstrations

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Solutions for Cyber Warfare Capabilities for Task Force Cyber Awakening	Various	Various : Various	0.000	4.725	Oct 2015	3.900	Oct 2016	6.650	Oct 2017	-		6.650	0.000	15.275	15.275
Solutions for Digital Thread	Various	Various : Various	0.514	0.100	Jul 2016	0.000		0.000		-		0.000	0.000	0.614	0.614
		Subtotal	0.514	4.825		3.900		6.650		-		6.650	0.000	15.889	15.889

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Support for Joint Configuration Management Information System (JCMIS)	C/FFP	NAVSUP : Mechanicsburg, PA	1.869	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Software Support for Joint Configuration Management Information System (JCMIS)	C/FFP	Wyle : Lexington Park, MD	0.000	0.313	Mar 2016	0.572	Mar 2017	0.480	Mar 2018	-		0.480	Continuing	Continuing	Continuing
		Subtotal	1.869	0.313		0.572		0.480		-		0.480	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support for Joint Configuration Management Information System (JCMIS)	WR	NAWCAD : Patuxent River, MD	0.676	0.105	Dec 2015	0.144	Dec 2016	0.147	Dec 2017	-		0.147	Continuing	Continuing	Continuing
Systems Engineering Support for Task Force Cyber Awakening	WR	NAWCAD : Patuxent River, MD	0.000	1.100	Oct 2015	0.716	Oct 2016	3.638	Oct 2017	-		3.638	0.000	5.454	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering Support for Digital Thread	WR	NAWCAD : Patuxent River, MD	0.100	0.187	Jul 2016	0.000		0.000		-		0.000	0.000	0.287	-
		Subtotal	0.776	1.392		0.860		3.785		-		3.785	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	3.159	6.530		5.332		10.915		-		10.915	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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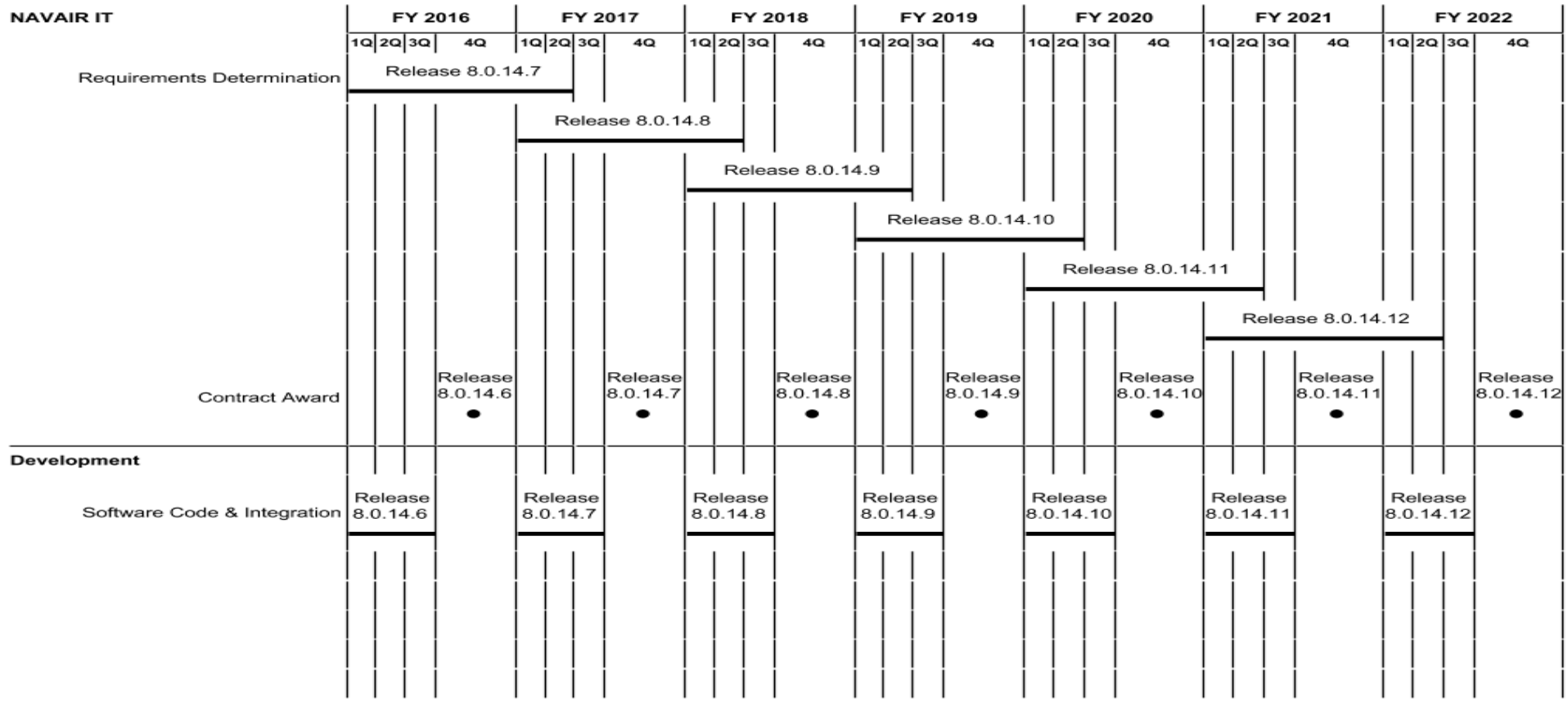

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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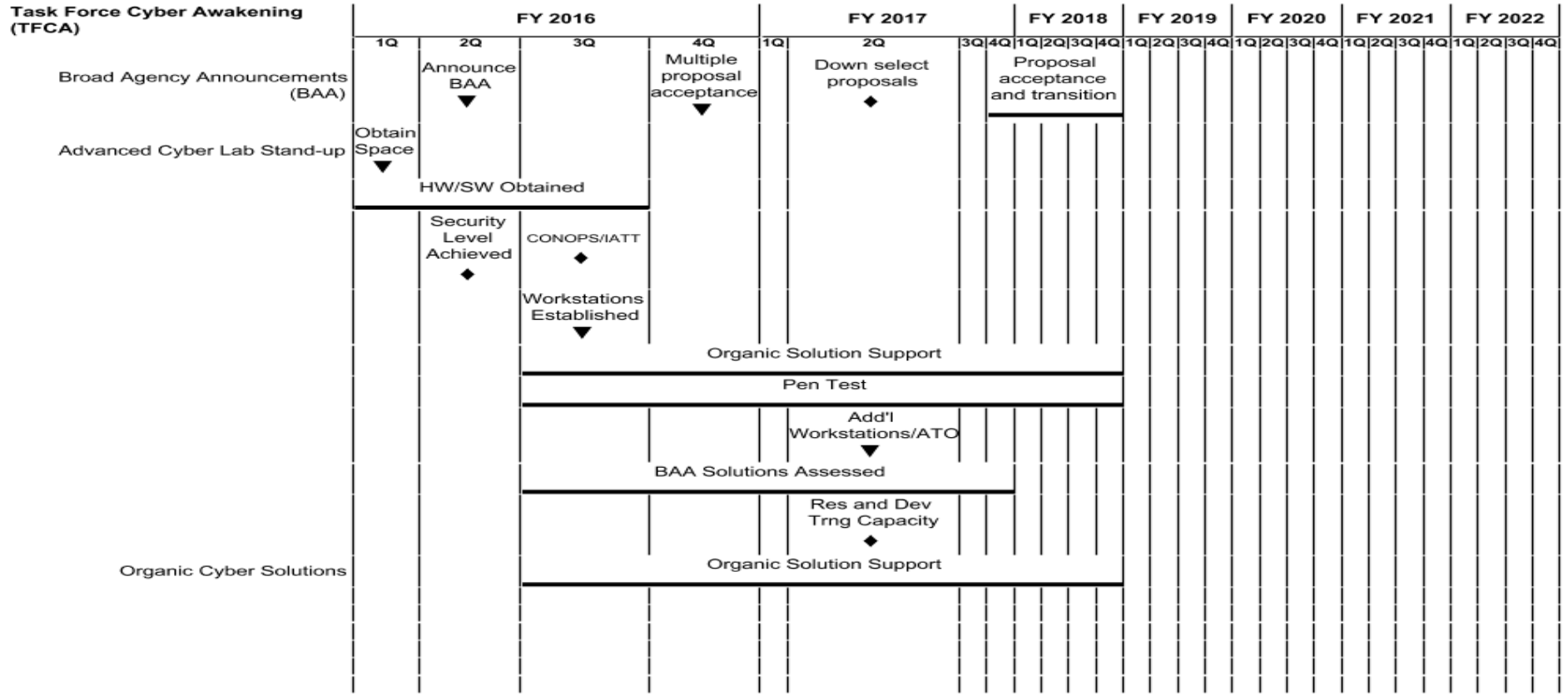

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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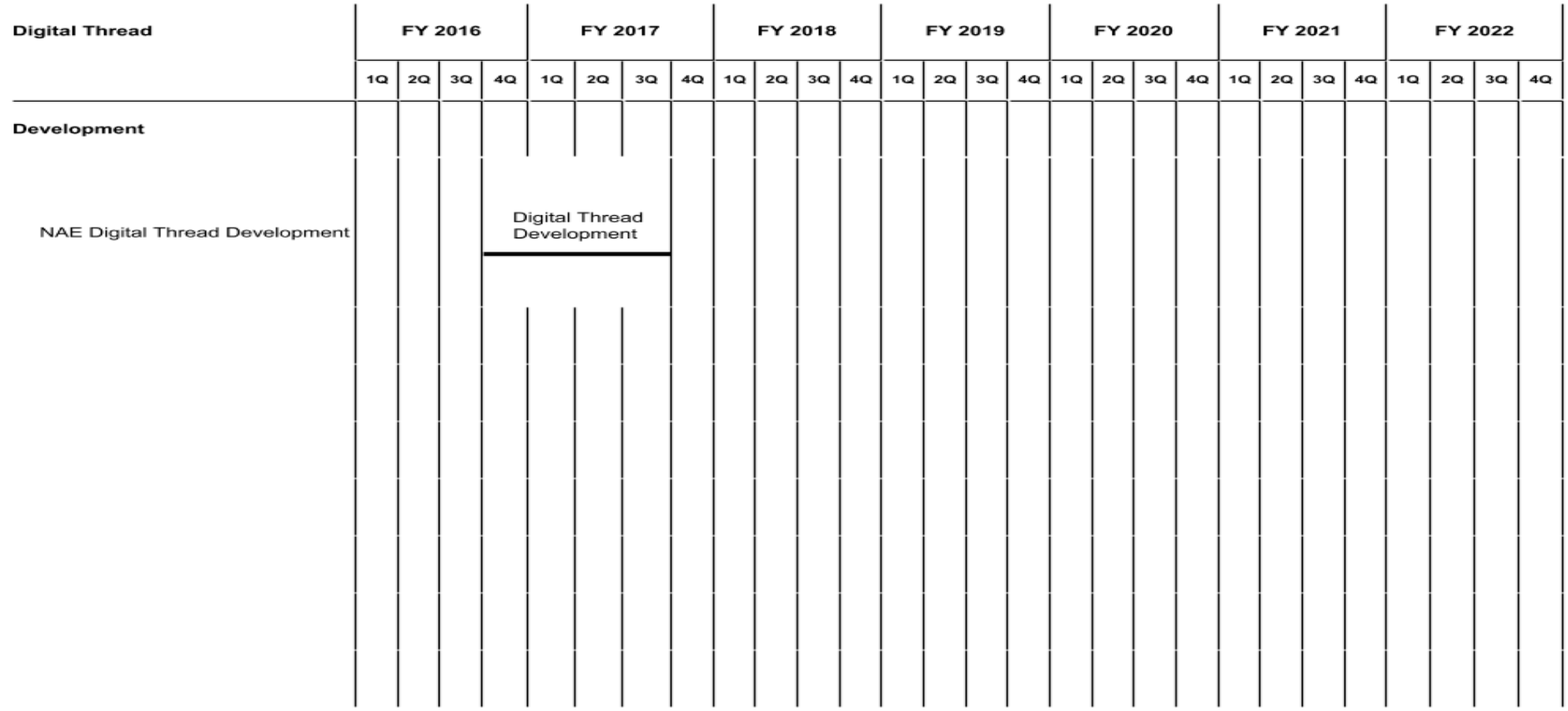

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NAVAIR IT				
Requirements Determination: Release 8.0.14.6	1	2016	2	2016
Requirements Determination: Release 8.0.14.7	1	2016	2	2017
Requirements Determination: Release 8.0.14.8	1	2017	2	2018
Requirements Determination: Release 8.0.14.9	1	2018	2	2019
Requirements Determination: Release 8.0.14.10	1	2019	2	2020
Requirements Determination: Release 8.0.14.11	1	2020	2	2021
Requirements Determination: Release 8.0.14.12	1	2021	2	2022
Contract Award: Contract Award, Release 8.0.14.6	4	2016	4	2016
Contract Award: Contract Award, Release 8.0.14.7	4	2017	4	2017
Contract Award: Contract Award, Release 8.0.14.8	4	2018	4	2018
Contract Award: Contract Award, Release 8.0.14.9	4	2019	4	2019
Contract Award: Contract Award, Release 8.0.14.10	4	2020	4	2020
Contract Award: Contract Award, Release 8.0.14.11	4	2021	4	2021
Contract Award: Contract Award, Release 8.0.14.12	4	2022	4	2022
Development: Software Code & Integration: Release 8.0.14.6	1	2016	3	2016
Development: Software Code & Integration: Release 8.0.14.7	1	2017	3	2017
Development: Software Code & Integration: Release 8.0.14.8	1	2018	3	2018
Development: Software Code & Integration: Release 8.0.14.9	1	2019	3	2019
Development: Software Code & Integration: Release 8.0.14.10	1	2020	3	2020
Development: Software Code & Integration: Release 8.0.14.11	1	2021	3	2021
Development: Software Code & Integration: Release 8.0.14.12	1	2022	3	2022

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Task Force Cyber Awakening (TFCA)				
Broad Agency Announcements (BAA): Announce BAA	2	2016	2	2016
Broad Agency Announcements (BAA): Proposal Acceptance Multiple	4	2016	4	2016
Broad Agency Announcements (BAA): Down Select Detailed Proposals	2	2017	2	2017
Broad Agency Announcements (BAA): Accept Proposals and Transition	4	2017	4	2018
Advanced Cyber Lab Stand-up: Obtain Space	1	2016	1	2016
Advanced Cyber Lab Stand-up: Obtain Specialized HW/SW tools	1	2016	3	2016
Advanced Cyber Lab Stand-up: Achieve Security Level	2	2016	2	2016
Advanced Cyber Lab Stand-up: Initial CONOPS/IATT	3	2016	3	2016
Advanced Cyber Lab Stand-up: Establish Workstations	3	2016	3	2016
Advanced Cyber Lab Stand-up: Support Organic Solutions	3	2016	4	2018
Advanced Cyber Lab Stand-up: Avionics Pen Test	3	2016	4	2018
Advanced Cyber Lab Stand-up: Establish Additional Workstations/ATO	2	2017	2	2017
Advanced Cyber Lab Stand-up: Assess BAA Solutions	3	2016	4	2017
Advanced Cyber Lab Stand-up: Establish Research and Development Training Capacity	2	2017	2	2017
Organic Cyber Solutions: Support Organic Solutions	3	2016	4	2018
Digital Thread				
Development: Digital Thread Development: Digital Thread Development	4	2016	3	2017

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2904: *NAVSEA IT*	138.399	16.827	30.879	64.233	-	64.233	52.136	36.501	41.739	23.989	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Navy Maritime Maintenance Enterprise Solution (NMMES) is the Information Technology toolset utilized to execute ship and submarine maintenance in the Naval Shipyards (NSY), Regional Maintenance Centers (RMC), Ship Repair Facility (SRF), Intermediate Maintenance Facilities (IMF), and commercial industrial sites worldwide. These maintenance activities support Fleet operations 24 hours per day, 7 days per week. The NMMES IT solution is used by over 40,000 civilians and military who conduct over $6.5B of ships maintenance and modernization on an annual basis. The NMMES program includes sustainment as well as multiple modernization efforts to insure the continued effectiveness of the Fleet maintenance IT toolset. These efforts consists of adding mandatory enhancements, such as Financial Audit Improvement Readiness (FIAR) changes and aligning with the Standard Accounting Budget Reporting System (SABRS) system. The NMMES program provides for software changes, retiring and/or replacing of costly legacy systems, transition planning, and systems engineering for integration with existing and future solutions. These efforts align with direction to insure that proposed interim solutions support and facilitate the transition to the planned, maintenance solution end state. This program will provide modernization, migration, testing, and consolidation of obsolete legacy systems to the next generation of centrally hosted tools supporting Fleet Maintenance systems for the Navy.

Increase in funding addresses critical deficiencies and minimizes the inherent risks that a catastrophic systems failure would be to fleet readiness. The increase in funds is required to support the modernizations of products that are on outdated software and to enhance the existing applications to make them cloud capable. It also provides for software enhancements required to make applications Financial Improvement and Audit Readiness (FIAR) compliant and to enable system modifications of financial feeder applications to interface with a FIAR compliant system of record. The requirement to handle 3-D integrated product models being delivered with CVN-78 and Virginia Class are also driving the increase. NAVSEA plans to execute these funds primarily through a current sustainment contract and several separate contracts through existing delivery orders to gain the specialized resources and material necessary to sustain these vital systems until they can be replaced by fully fielding the NMMES Technical Refresh (TR) solution. There is an overlapping period of time where both solutions are operating and requiring sustainment, hence the increase in the requested amounts for current systems and subsequent replacement system(s). An increase to NMMES-TR in FY18 will accomplish the following work increments: 1) the development and implementation of a Work Brokering solution that addresses both public and private yards for planning to be completed in FY20; 2) the architecture, engineering, design and delivery of an Enterprise Services Bus (ESB) network/interfacing to provide for the support and transition from the NMMES solution to the NMMES-TR solution; 3) the planning and preparation for the acquisition, configuration, and deployment of the Maintenance, Repair, and Overhaul (MRO) replacement solution TR increment. An integrated approach of supporting sustainment of current systems and ramping up the Technical Refresh in FY18 reduces risk of development and deployment of critical systems supporting ship maintenance.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: electronic Technical Work Document (eTWD)	11.500	12.632	10.500	0.000	10.500
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: The eTWD Initiative is a NAVSEA Sponsored, CNO approved Reduction in Total Ownership Cost (RTOC) Initiative to establish interactive electronic Technical Work Document (eTWD) capability for use in the naval shipyards. An eTWD will be used to execute maintenance, repair, overhaul and modernization work packages on ships and submarines undergoing major availabilities in naval shipyards. This solution will provide paperless work packages, pulling authoritative data from the existing NMMES Family of Systems supporting ship maintenance. The interactive electronic work instruction will be used at the jobsite replacing the current paper driven instructions. The overall goal for eTWD is twofold: 1) to reduce the resources and time preparing, executing and certifying work instructions; and 2) enable the non-stop execution of work by having online documents and access to problem resolution. The eTWD Initiative is in progress. ***FY 2016 Accomplishments:*** Following award of initial contract, performed the design and interfacing planning for this new capability with the current NMMES solution supporting ship and submarine maintenance in the four Naval shipyards. Completed modification of the contract to meet government requirements for the capability to operate in a Navy Data Center and meet Risk Management Framework (RMF) cyber security requirements. ***FY 2017 Plans:*** Complete the software development and configuration of the eTWD capability. Conduct formal Government Acceptance Testing of the software and validate that the changes made to the current solution are acceptable and working properly. Complete the pre-deployment planning and training necessary to begin implementation in Q4FY17. ***FY 2018 Base Plans:*** Following stabilization of eTWD operation of first naval shipyard deployment, continue implementation at the remaining naval shipyards. ***FY 2018 OCO Plans:*** N/A					
Title: Project Sequencing & Scheduling (PSS) Upgrade	0.000	1.000	2.500	0.000	2.500
Articles:	-	-	-	-	-
Description: The PSS scheduling system provides the naval shipyards (Portsmouth Naval Shipyard, Puget Sound Naval Shipyard & IMF, Pearl Harbor Naval Shipyard & IMF, and Norfolk Naval Shipyard) with a customized, flexible scheduling tool for CNO availabilities and other maintenance, repair and overhaul work					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
assigned to the activities. Key system objectives include: 1) Standardization of the scheduling processes and tools; 2) Creation of dates for use in the NMMES project management software; 3) Generation of user and management reports covering all aspects of scheduling of a ship or submarine availability. The current PSS application is based on a 1980s proprietary commercial product originally acquired over 25 years ago. The application is outdated and the vendor has informed the Navy that it will no longer be supported in the near future requiring Navy to pursue an immediate upgrade to a supportable product, while not interrupted maintenance availabilities. The product had already become increasingly difficult to maintain and with the pending loss of vendor support could lead to catastrophic system failure and loss of ability to maintain project schedules. The PSS Upgrade will convert the system from the Robbins-Gioia CAT proprietary solution to the Robbins-Gioia Jaguar 2020 (J2020) solution and improve the web-basing of the system. ***FY 2016 Accomplishments:*** Added this emerging requirement to the FY17 Navy Organization Execution Plan (OEP) as part of the NMMES Initiative; and conducted advanced planning confirming the ability to successfully transition to the proposed solution. ***FY 2017 Plans:*** Perform a Scheduling Improvement Analysis to insure that design modifications required for the J2020 product fully aligns with the other NMMES Family of Systems. Following completion of Analysis perform the necessary software develop and integration of the J2020 product and begin Government Acceptance Testing (GAT) of the product. ***FY 2018 Base Plans:*** Complete GAT of the product and conduct implementation and training of the user community in the use of the PSS Upgrade. ***FY 2018 OCO Plans:*** N/A					
Title: Planned Maintenance System (PMS) Upgrade	0.000	0.644	3.128	0.000	3.128
Articles:	-	-	-	-	-
Description: The Planned Maintenance System Management Information System (PMSMIS) is a web solution that tracks the status of all Maintenance Index Pages (MIPs) and Maintenance Requirements Cards (MRCs) including new and revised documentation, allows for Technical Feedback Report (TFBR) generation and tracking from initial reporting to problem resolution, management of activity documentation distribution					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
information, document development history including Reliability-Centered Maintenance (RCM) information and other data needed to support all forms of planned maintenance in the Fleet. The existing process requires excessive sailor and shore expert administrative burden, creates complex and ambiguous documents that can be difficult to follow, takes too long to implement changes, leads to equipment maintenance not being properly executed, and lacks tools for leadership to monitor program implementation and assure satisfactory performance. Furthermore, the existing process does not support distributed and optimally-manned ship concepts of operation, such as those now used by the Naval Expeditionary Combat Command and the Littoral Combat Ship. The future PMS Upgrade will also provide visibility to shore maintenance leaders to ensure equipment is consistently scheduled throughout the fleet and to identify execution issues. ***FY 2016 Accomplishments:*** Added this emerging requirement to the FY17 Navy Organization Execution Plan (OEP) after gaining approval to proceed on PMS Upgrade by maintenance community stakeholders at the NAVSEA Investment Review Board. Conducted advanced planning and preliminary market research to assess potential for acquiring a commercial product. ***FY 2017 Plans:*** Conduct detailed market analysis, and design appraisals to align replacement solution with other maintenance products. Begin acquisition and software development. ***FY 2018 Base Plans:*** Complete software design and/or configuration of PMS Upgrade and conduct Government Acceptance Testing (GAT), while planning for deployment and implementation. Begin user community training aligned with implementation and deployment plan. ***FY 2018 OCO Plans:*** N/A					
Title: Strategic Planning &Forecasting (SPF) Upgrade ***Articles:*** ***Description:*** SPF is part of a suite of tools in the NMMES Family of Systems that are utilized to assist Navy industrial activities in resource planning and long term work forecasting to meet CNO strategic maintenance requirements through the gathering and compiling of workforce data. Two additional systems; 1) Performance Measurement and Control (PMC) and Quality Performance System (QPS) are interfaced with SPF to produce the staffing, planning and performance measurement necessary to successfully accomplish work in navy	0.000 -	0.103 -	4.000 -	0.000 -	4.000 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
industrial activities. All three of these systems have known software deficiencies which limit productivity and require cumbersome manual workarounds. Historically to effectively operate and meet mission needs. The shipyards and RMCs have supplemented this suite with additional local spreadsheet and databases, adding to the complexity of this aging solution. One goal of the SPF Upgrade is to eliminate these ad hoc databases and unify the solution to effectively operate in the targeted data center environment. The SPF Upgrade is part of the next Service Life Extension that will address the accumulation of significant problems with this system, update the software platform, provide integrated metrics capabilities across shipyards and include access of data to headquarters' planners. The SPF Upgrade will include add a modern database architecture and a fully functioning data warehouse environment that will eliminate the weekend long running of PMC jobs that hinders efficiency and productivity. The Upgrade will eliminate the currently required manual interfaces with other NMMES systems to produce a seamless real-time environment that can accommodate all project management metrics, as well as all ship maintenance related metrics. Additionally, it will eliminate the manual data gathering and consolidation required to produce Shipyard Interim Metrics; and eliminate the need for Headquarters and each shipyard to maintain their own unique standalone data files. ***FY 2016 Accomplishments:*** Conducted advanced planning and estimating to support inclusion in the FY17 Organization Execution Plan (OEP) as part of the NMMES Initiative. ***FY 2017 Plans:*** Begin systems analysis and market research to determine mature technologies and alignment of SPF Upgrade with NMMES Family of Systems. ***FY 2018 Base Plans:*** Conduct software development and begin Government Acceptance Testing of SPF Upgrade in preparation for FY19 deployment and implementation. ***FY 2018 OCO Plans:*** N/A					
Title: NMMES Technical Refresh (NMMES-TR)	2.000	12.000	25.200	0.000	25.200
Articles:	-	-	-	-	-
Description: The current Navy Maritime Maintenance Enterprise Solution (NMMES) toolset enables the execution of submarine, aircraft carrier, and surface ship maintenance and repair for the Naval Shipyards (NSY), Intermediate Maintenance Facilities (IMF), Regional Maintenance Centers (RMC), Trident Refit Facilities (TRF),					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and Ship Repair Facilities (SRF). It consists of a family of systems and applications that are at (or nearing) their end-of-life. These systems and applications support a workforce of over 51,000 worldwide and enable approximately $9.5B per year of maintenance and repair work. The critical business processes to schedule, execute, monitor, certify work, and pay employees at each activity are codified within the Information Technology (IT) toolset; there is no manual alternative. Navy has conducted two Service Life Extensions for the current NMMES toolset, and is executing multiple enhancements to maintain its cyber security and operational effectiveness. The current IT toolset requires significant annual investment to maintain its status quo and reactively patch cybersecurity shortfalls; however, even with this investment, many of the underlying issues with the current toolset will not be resolved. Annual efforts to restore the NMMES budgets to meet requirements have only been partially successful and have required multiple annual supplemental actions to address deficiencies. The urgency to modernize these systems has grown every year as deferred upgrades and underfunded sustainment has led to the current state of the NMMES toolset, which is not adaptable, reliable, supportable, affordable, nor maintainable. Failure to replace the toolset will increase the likelihood of IT related maintenance delays for submarines, aircraft carriers, and surface ships directly impacting fleet readiness for meeting national priorities. Also, due to the inflexibility of the NMMES status quo toolset, desired Business Process Reengineering (BPR) functional enhancements (e.g., financial audit compliance, data analytics, ability to interface with digital shipbuilding environment) have not been possible. The NMMES-TR is a pre-Milestone A acquisition program that will provide a sustainable enterprise IT solution leveraging Commercial, Off-The-Shelf (COTS) technology and business processes for shore maritime maintenance, which also standardizes processes and tools. Unlike the uniquely custom designed status quo toolset, the NMMES-TR solution will not implement product customization to match the current maintenance business processes; but rather, maintenance business processes will be modified to match the solution, thereby adopting industry best practices. Accordingly, the solution will be more flexible to the BPR process, and more agile to capitalize on efficiency improvement opportunities and innovations. This will facilitate alignment with the Optimized Fleet Response Plan (OFRP) by assisting the maintenance activities with accomplishing assigned tasks as planned in order that submarines, aircraft carriers, and surface ships can properly train and deploy on schedule. NMMES-TR will also provide a modern solution that will be more effective and efficient in combating cybersecurity threats, and capable of continuous monitoring. The actual solution will be formed after the Analysis of Alternatives (AoA). ***FY 2016 Accomplishments:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2904 / *NAVSEA IT*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Successfully completed Navy Gate I Review. Prepared cost estimates. Formally established Program Office and appointed Program Manager. Established Executive Steering Committee for NMMES-TR program oversight. Establishing a Requirements Integrated Product Team (IPT) to scrutinize, unify, and standardize BPR defined requirements into a contracting-ready document for future procurement. Developing staffing requirements to support ACAT level Program Management Office. Drafted Material Development Decision (MDD) Acquisition Decision Memorandum (ADM) for release. ***FY 2017 Plans:*** Complete Analysis of Alternatives (AoA) for NMMES-TR. Begin analysis and continue market research (and Request(s) for Information) for assessment of industry solutions. Develop and gain approval for documentation in support of Milestone A. Current schedule is forecasting Milestone A in Q4FY17. ***FY 2018 Base Plans:*** NMMES-TR in FY18 will accomplish the following work increments: 1) Completion of the design and development of a Work Brokering solution. This solution addresses both public and private yards for ship maintenance requirements and ship class maintenance plans that are then screened into maintenance availability projects for individual platforms - and then brokered to a maintenance activity for accomplishment based on available capabilities; 2) Conduct the design architecture, systems engineering, configuration and delivery of an Enterprise Services Bus (ESB) network/interfacing environment to provide for the support and transition from the NMMES solution to the NMMES-TR solution; 3) Conduct the planning and preparation for the acquisition (including releasing a Request for Proposal), the configuration, and the deployment of a Maintenance, Repair, and Overhaul (MRO) replacement solution TR increment. The schedule of this increment has been aligned with the Work Brokering solution and the ESB environment. ***FY 2018 OCO Plans:*** N/A					
Title: Financial Technical Upgrade ***Articles:*** ***Description:*** The NMMES Family of Systems has two primary systems that are financial feeders; 1) SYMIS Mission Funded COST (aka COST) system which processes cost related data for mission funded activities with the Standard Accounting & Reporting System - Field Level (STARS-FL); and 2) the SYMIS Pre & Post Payroll Processes system which manages the Time & Attendance data from the NMMES Family of Systems to the	0.000 -	2.000 -	4.910 -	0.000 -	4.910 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Defense Civilian Payroll System (DCPS). These systems are targeted for modernization to address the FOUR mandatory requirements: 1) meeting FISCAM and auditability requirements; 2) transitioning COST to interface with SABRS, vice STARS-FL no later than 30 September 2017; 3) as both these systems are COBOL-based - COST, utilizes a 1990s era Case tool (PACBASE) to generate COBOL-ready code. In 2015 vendor support for the PACBASE tool was transitioned to an IBM subsidiary in France (who in 2016 informed the Navy that support for the tool would end by 2018), hence without this tool the COST system must be refreshed in order to operate; and 4) the rapid increase in the cost of gaining sufficient COBOL licenses to operate these two systems in support of fleet maintenance has also created emerging execution year budget challenges for the Navy to such an extent that it is now more feasible to immediately transition these systems to a non-COBOL solution than to continue in the current licensing structure. Hence, the Financial Technical Upgrade is to address these four urgent needs in order to continue operation of the NMMES Family of Systems beyond 2018. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Complete analysis of COBOL licensing requirements and feasibility assessment to address COBOL alternatives. Complete planning of first Increment of Financial Technical Upgrade for early delivery of capability to add the SABRS interface to the NMMES Family of Systems. Complete development of the SABRS interface and conduct Government Acceptance Testing (GAT). Deploy and conduct training to the user community to effectively use the SABRS tool in conjunction with the NMMES ship maintenance toolset. Complete and deploy the FISCAM efficiencies and FIAR requirements necessary to meet financial auditability. Conduct the software development necessary to transition both the COST & PPPP systems to be non-COBOL licensees. ***FY 2018 Base Plans:*** Complete GAT for the modernized COST & PPPP systems, and begin training user in preparation for deployment of these capabilities to the user community. Begin the systems deployment. ***FY 2018 OCO Plans:*** N/A					
Title: Material Management Upgrade	0.000	1.000	5.250	0.000	5.250
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2904 / *NAVSEA IT*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: The Material Access Technology-Mission Funded (MATmf) system is used by all Naval Shipyards to manage and provide logistical support for services and materials manufactured, purchased and utilized in the overhaul, repair, and maintenance of ships and submarines. MATmf provides quantitative, financial, and status information on industrial materials. It monitors the shop stores in the shipyard and assesses the direct material inventories. The MATmf system has reached end-of-life and is operating on software components that are considered obsolete. A Service Life Extension is required to support the future capabilities (i.e. eTWD requirements), to correct sustainability issues, and to improve the ability to support current and future ships maintenance. While the upcoming MSE releases will consolidate application databases (including MATmf into a data center environment); it does not include material integration across shipyards nor provide usable real time material information or metrics across the ship maintenance community. The MSE releases will also not convert the outdated development code, eliminate the time cumbersome manual batch processing, nor fix a host of long term shortcomings affecting the efficiency of the system (including long time printing limitations affecting for Material Control Tags and waterfront performance). Over the past 5 years, NAVSEA 08 and the Corporate Material Process Action Team through multiple LEAN events has identified and documented many areas that need enhancements. Some of these include: 1) the ability to allow for Fiscal Year rollover of JMLs, 2) the ability to allow redistribution of bulk receipt inspected materials to other shipyards, 3) the ability to report transactions for BP28 assets, 4) improve the ability to create efficient processes for receipt of RFI tagged material into Shop Stores, 5) improve receipt of shipyard contracts into shipyard for receipt inspection, 6) allow DLR material in Shop Stores, 7) address transition to another handheld scanner as the current handhelds are no longer available for purchase. These deficiencies will be addressed in the Material Management Upgrade. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Conduct initial design analysis and market research of current technologies. Complete assessment of handheld scanner alternatives insuring that the selected replacement handheld meets NAVSEA 08 cyber security requirements. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conduct software development efforts and begin Government Acceptance Testing (GAT) of the developed solution. Conduct Integration testing to insure the planned solution satisfactorily integrates with the NMMES Family of Systems. ***FY 2018 OCO Plans:*** N/A					
Title: NMMES -- Maritime Systems Environment (MSE) -- Database Optimization	3.327	1.500	3.800	0.000	3.800
Articles:	-	-	-	-	-
Description: Program has the responsibility for maintenance, modernization and improvement of the IT systems which support shore maintenance, modernization, repair, logistics & readiness for ships and submarines across the Navy. The Navy Maritime Maintenance Enterprise Solution (NMMES) Initiative funds the sustainment of deployed systems, as well as the modernization and selected technology refreshment of ship maintenance systems. These existing core ship shore maintenance systems, which are integral to shore ship repair activities, reside in the naval shipyards, regional maintenance centers, ship repair facilities, Supervisors of Shipbuilding, and other industrial activities throughout the world. The present capabilities for this aging Family of Systems continue to require a challenging level of maintenance support. They require information assurance upgrades, selective modernization and/or enhancement to address technological obsolescence and to remove cumbersome work practices to gain efficiencies; and continual protection of Naval Nuclear Propulsion information. These efforts are required to minimize the risk of systems failure that may directly prevent the fleet from operating at its full potential due to interruptions of the Intermediate and Depot level maintenance activities. These NMMES managed systems support over $9B yearly in ship maintenance and modernization and a military/civilian workforce of over 50,000 personnel supporting worldwide operations. These systems are presently undergoing a second Service Life Extension (SLE) to address cyber security deficiencies, consolidate and align databases across multiple data instances, and to transition the NMMES Family of Systems supporting fleet maintenance into an approved Navy Enterprise Data Center. The SLE is divided into multiple releases: 1) MSE 1.0 - for the Regional Maintenance Centers and Ship Repair Facilities, including FDRMC Rota; 2) MSE 1.1 - for the Naval shipyards; 3) MSE 1.2 - which includes the eTWD capability; 4) MSE 1.3 - for addressing FISCAM requirements, adding an interface for SABRS, and for Database Optimization of the entire environment across the fleet maintenance enterprise to improve throughput for the user community. ***FY 2016 Accomplishments:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Completed stabilization of the MSE 1.0 release in support of the Southeast Regional Maintenance Center; using these lessons learned - implemented MSE 1.0 for the Mid Atlantic Regional Maintenance Center and Southwest Regional Maintenance Center. ***FY 2017 Plans:*** Conduct system training and Go-Live for Ship Repair Facility - Japan, and Forward Deployed RMC at Rota, Spain, Naples, Italy, and Bahrain, Bahrain. Complete MSE 1.1 coding and Government Acceptance Testing (GAT). Complete MSE 1.2 design and integration - begin to conduct GAT. Begin analysis and design of MSE 1.3. ***FY 2018 Base Plans:*** Complete MSE 1.2 release and implementation. Complete GAT for MSE 1.3 and align with database at NEDC-Charleston. Release MSE 1.3 for production use. ***FY 2018 OCO Plans:*** N/A					
Title: SUPDESK - Timekeeping For All ***Articles:*** ***Description:*** The current timekeeping system (SUPDESK) at the shipyards allows managers to input time for their employees. This was considered a financial compliance issue and requires the system be adjusted to allow all shipyard workers to input their time. ***FY 2016 Accomplishments:*** None. ***FY 2017 Plans:*** None. ***FY 2018 Base Plans:*** Begin design and development of SUPDESK system to allow all shipyard workers to input time. This includes code development, integrated testing, government acceptance testing, training and deployment. ***FY 2018 OCO Plans:*** N/A	0.000 -	0.000 -	2.700 -	0.000 -	2.700 -
Title: Local Application Rationalization	0.000	0.000	2.245	0.000	2.245

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
Description: There are numerous local applications at the shipyard that need to be rationalized into several "best of breed" as the Maritime Systems Environment (MSE) is deployed. This requires reviewing all local application functionality and determining which applications should be migrated. ***FY 2016 Accomplishments:*** None. ***FY 2017 Plans:*** None. ***FY 2018 Base Plans:*** Begin reviewing all shipyard local applications and determining which ones best meeting shipyard requirements. Document and develop applications as required to address requirements at each shipyards. This includes review, design, testing, training and implementation. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	16.827	30.879	64.233	0.000	64.233

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The backbone of the present solution is a set of dated information technology (IT) products that are approaching end-of-life. In order to ensure that the IT toolset would continue functioning as required the Fleet Maintenance Board of Directors approved the establishment of the NAVSEA PMO-IT to oversee the selected development and sustainment efforts of this solution; to acquire and manage the IT resources necessary to gain further efficiencies in the systems; and to transition this solution to a more modern and efficient end state. Selected systems modernizations are aligned with ongoing systems sustainment to provide an IT solution until a Commercial of the Shelf (COTS) based Technical Refresh of this solution can be completed and deployed. Existing IT contracts will be used for sustainment services and new contracts will be put in place to support NMMES TR services, utilizing existing delivery orders where feasible. ePLM: NSWC-PHD will lead the integration of SBIR-developed technologies through the utilization of Phase 3 SBIR contracts. SBIR technologies will be enhanced and integrated into the ePLM tool suite and will result in execution of a competitive, full acquisition strategy.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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E. Performance Metrics

System performance is measured using the following:

A. Operational Availability (A_o): Percent of time systems are available for use.

(1) Mean Down Time (MDT) is the mean time the system will be down to start and complete maintenance and corrective task.

MDT = (Total Down Time)/(Total Number of Maintenance). Measure of Performance (MOP): Total Down Time ? 87.6 Hrs/Year.

(2) Mean Time Between Maintenance (MTBM) is the mean time between maintenance, all corrective and preventive maintenance. MTBM = (Total Up Time)/(Total Number of Maintenance). MOP: A_o = MTBM / (MTBM+MDT) > 0.99.

B. Reliability: Ability of a system to perform its mission without failure or degradation under a prescribed set of operating conditions.

(1) Mean Time Between Failure (MTBF) is the mean time between unforeseen system failures which result in substantial loss in users' productivity, including being off-line unscheduled. MTBF = (Total Up Time)/(Total Number of Failures). MOP: MTBF > 3504 Hours

(2) Mean Time To Repair (MTTR) is the mean time to perform the corrective maintenance to repair the failure. MTTR = (Total Down Time for corrective maintenance)/(Total Number of Failures). MOP: MTTR less than or equal to 16 Hours.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	C/CPFF	NAVSEA : WNY, D.C.	109.929	10.007	Jul 2016	18.879	Dec 2016	31.733	Oct 2017	-		31.733	Continuing	Continuing	Continuing
Software Development	WR	NSLC : Mechanicsburg, PA	15.999	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Advance Planning Analysis	WR	SPAWAR : Arlington, VA	7.471	0.000		0.000		0.000		-		0.000	0.000	7.471	-
Advance Planning Analysis	TBD	NAVSEA : WNY, D.C.	0.000	6.820	May 2016	12.000	Dec 2016	32.500	Nov 2017	-		32.500	0.000	51.320	-
Advance Planning Analysis	TBD	NSWC PHD : Port Hueneme, CA	5.000	0.000		0.000		0.000		-		0.000	0.000	5.000	-
		Subtotal	138.399	16.827		30.879		64.233		-		64.233	-	-	-

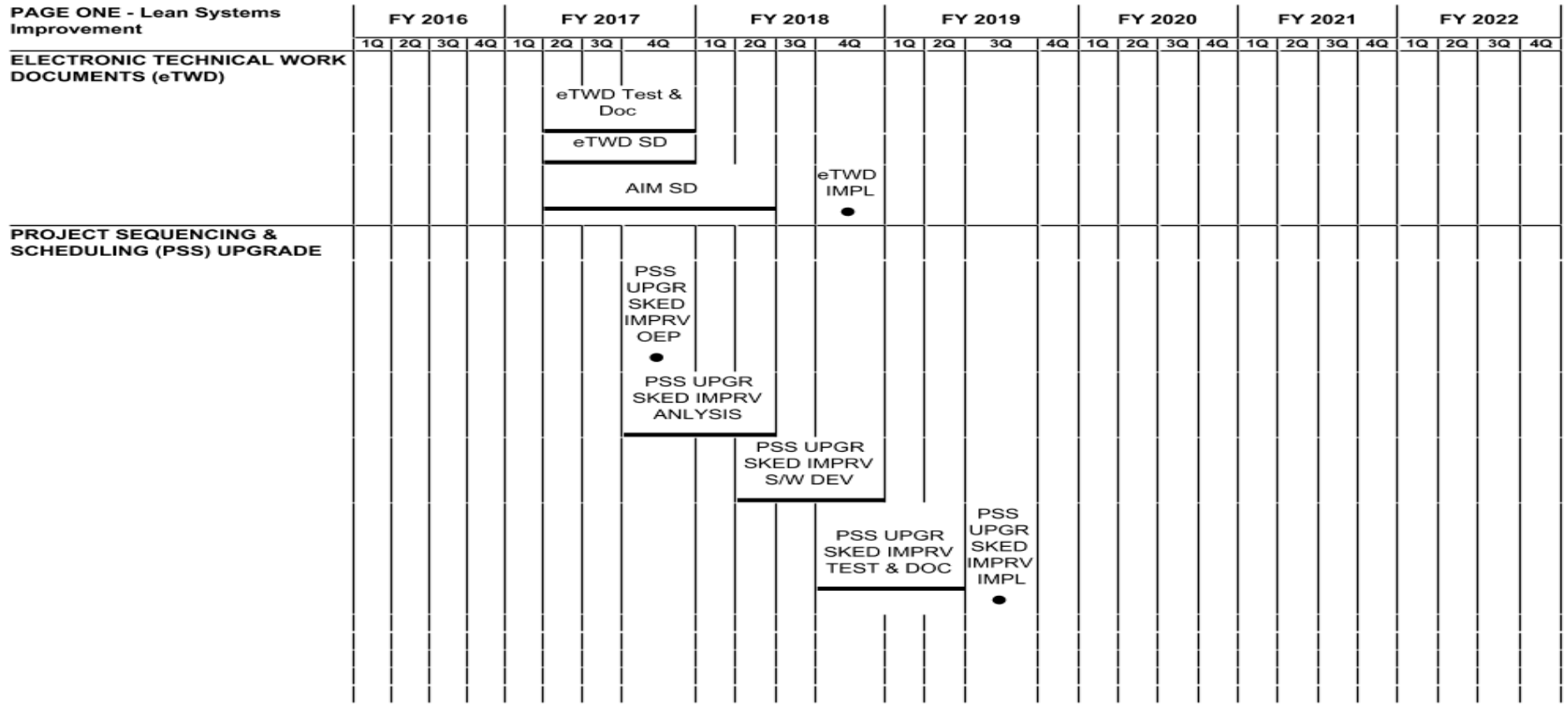
Remarks

Program plans to execute all contract awards for software development of shipyard and national systems through the NAVSEA SEAPORT vehicle and other competitively awarded contracts.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	138.399	16.827		30.879		64.233		-		64.233	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2904 / *NAVSEA IT*



2018OSD - 0605013N - 2904

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2904 / *NAVSEA IT*

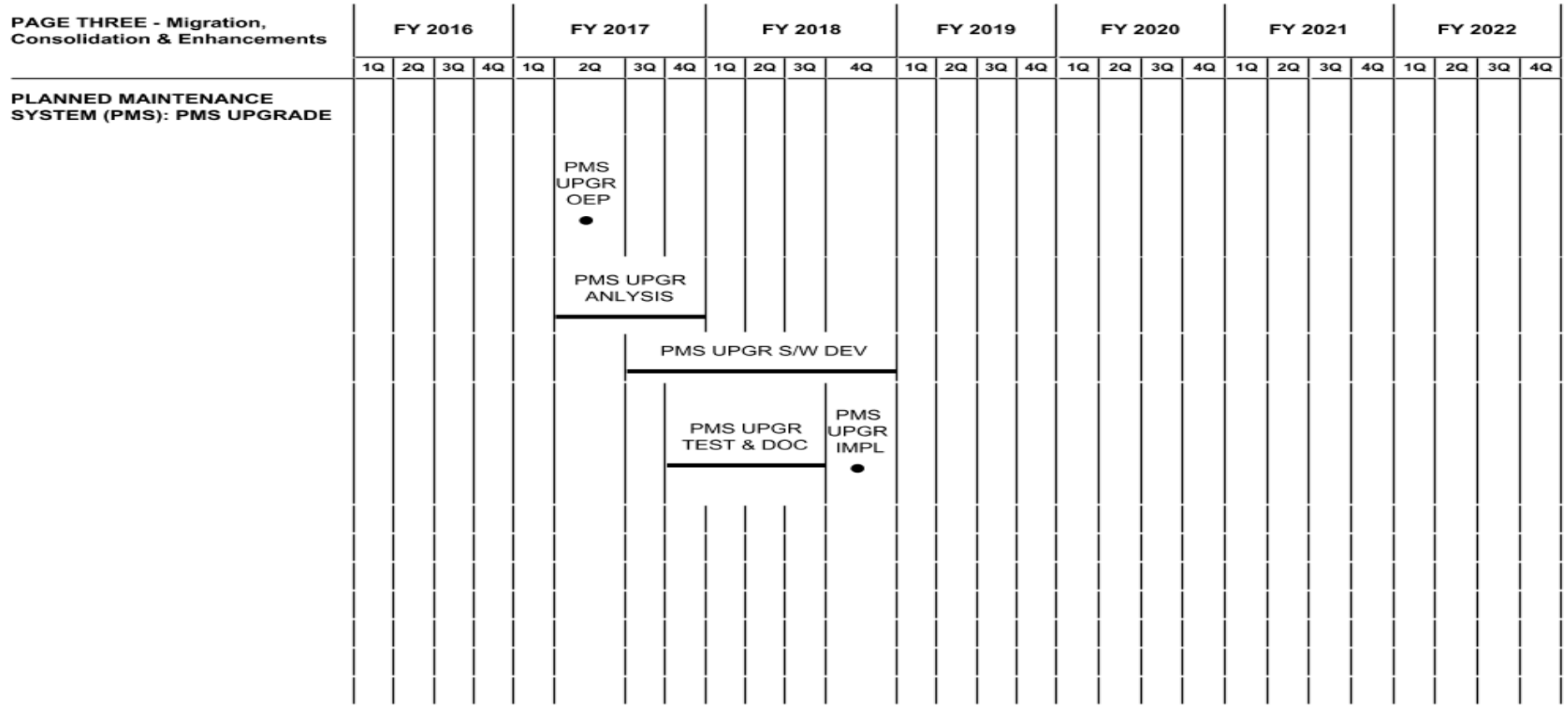


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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2904 / *NAVSEA IT*

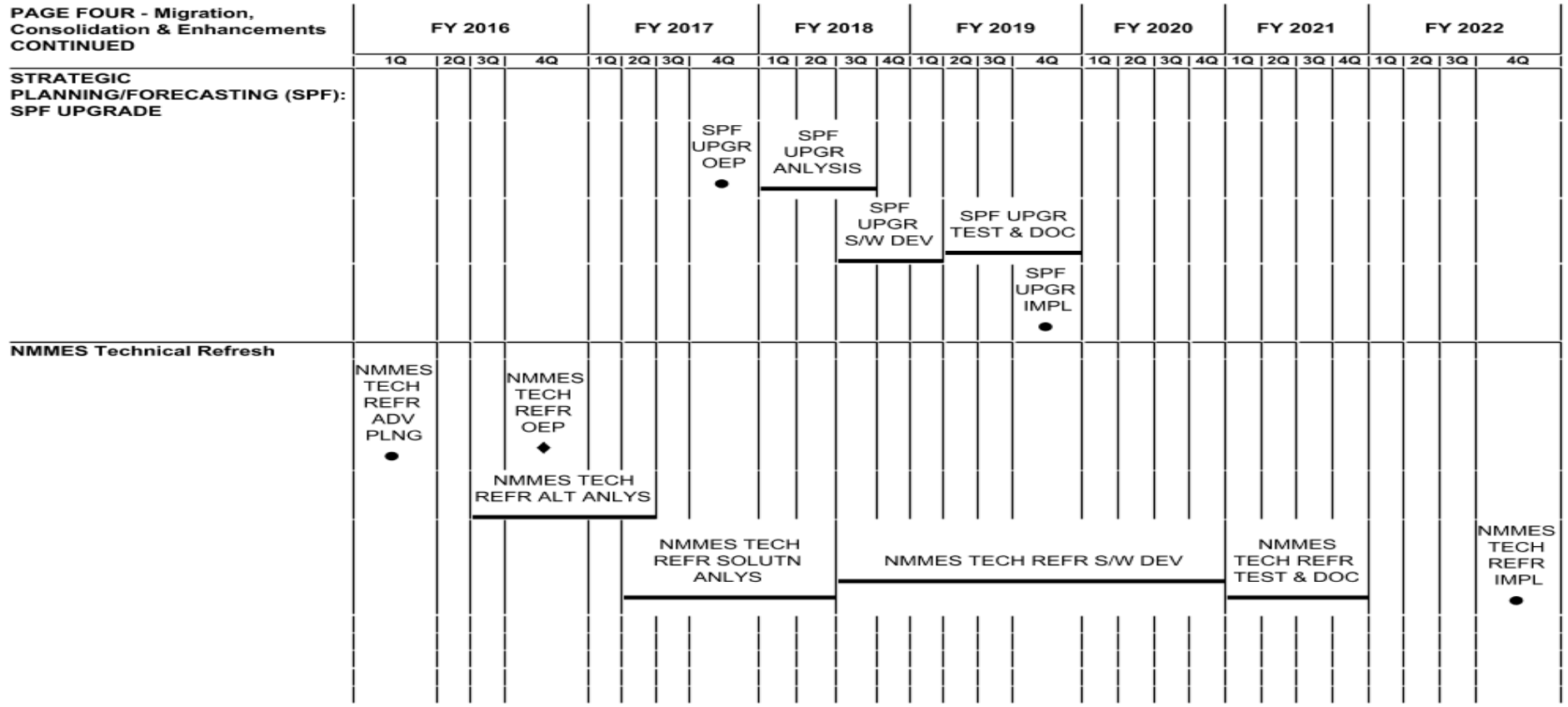

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2904 / *NAVSEA IT*

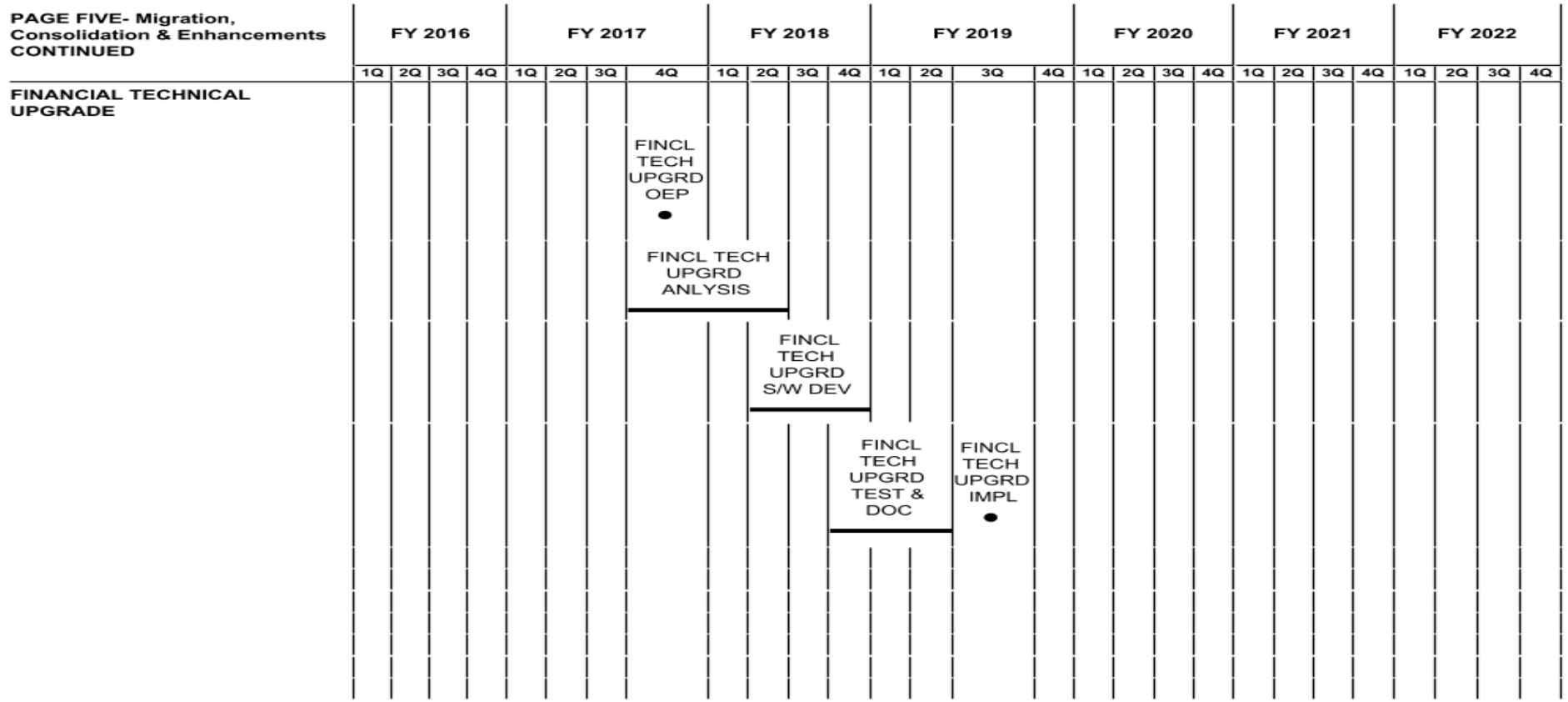

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2904 / *NAVSEA IT*

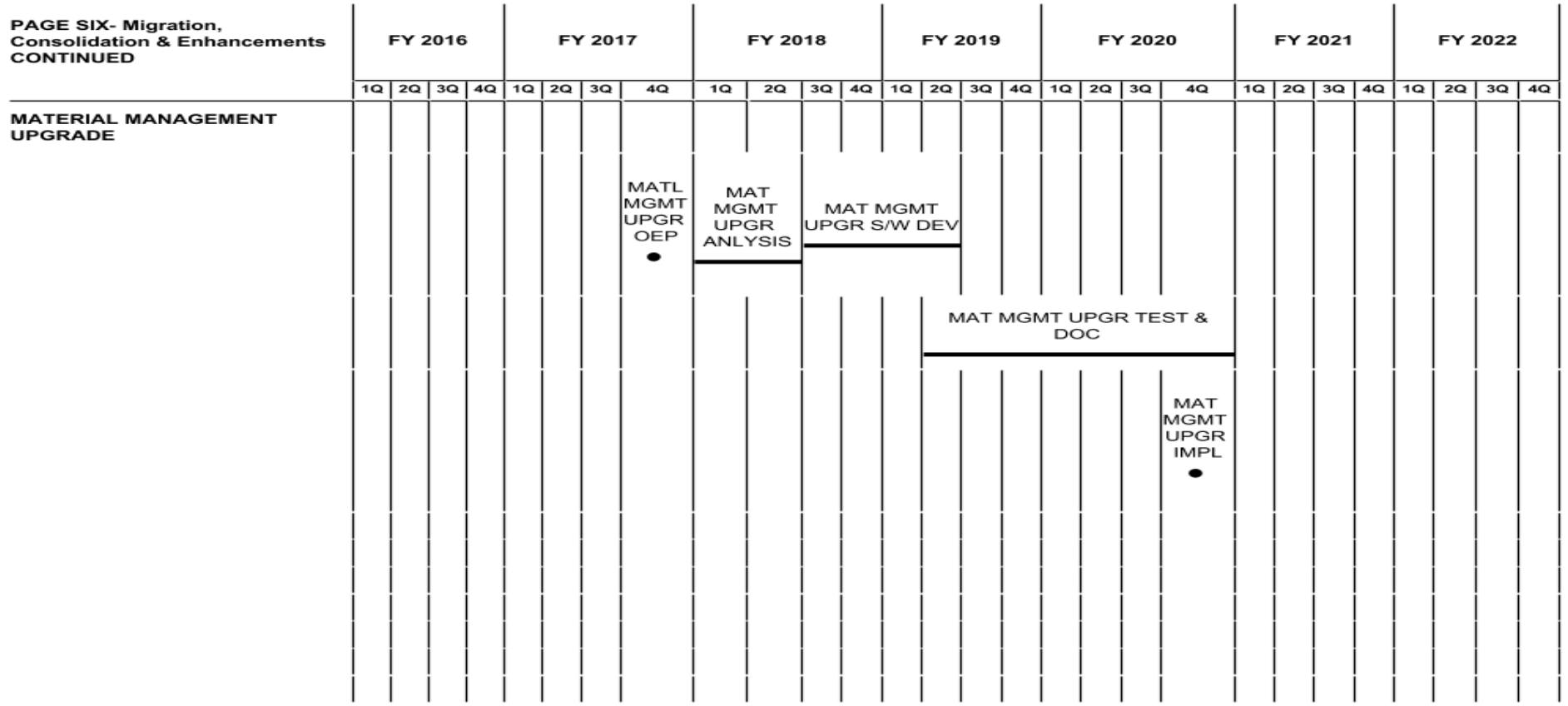

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2904 / *NAVSEA IT*

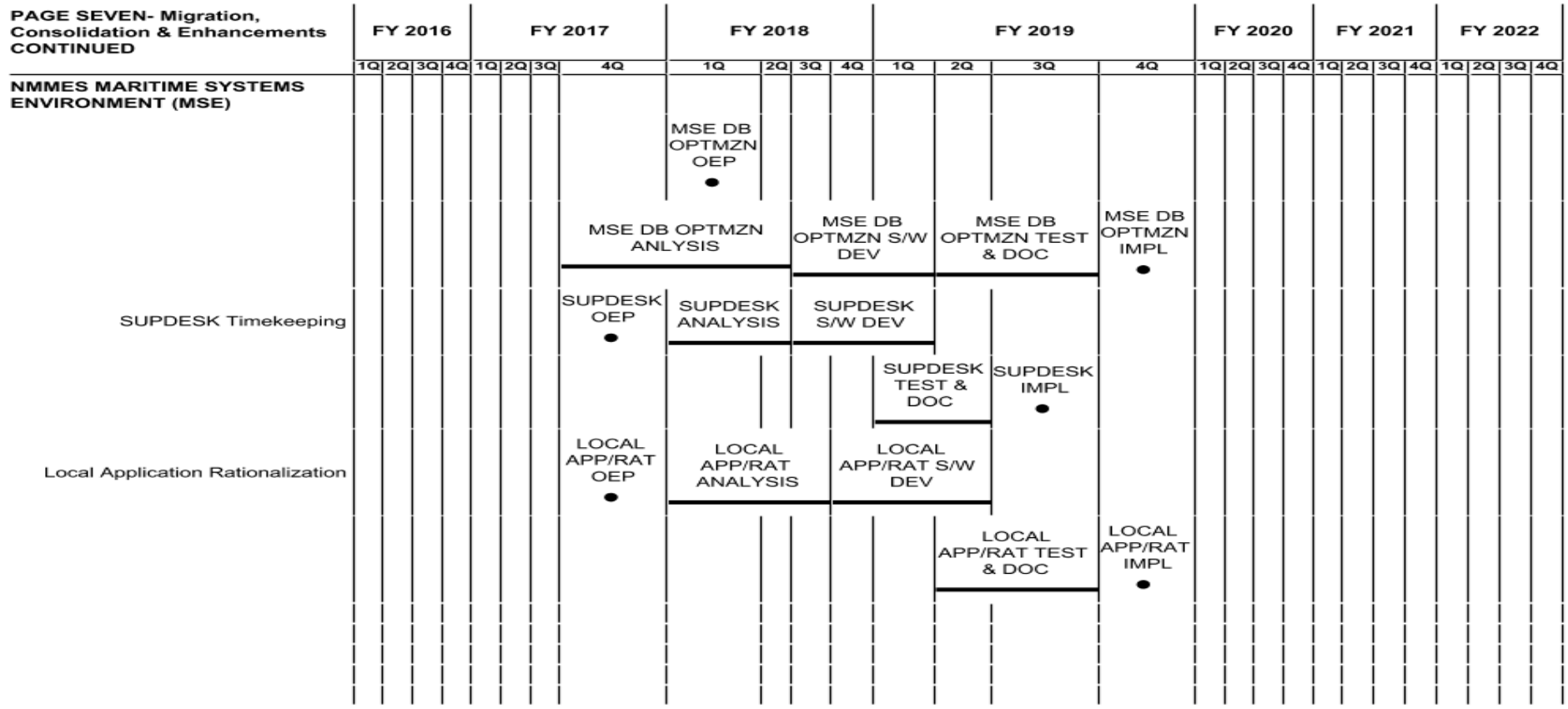

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
PAGE ONE - Lean Systems Improvement				
ELECTRONIC TECHNICAL WORK DOCUMENTS (eTWD): eTWD Testing & Documentation	2	2017	4	2017
ELECTRONIC TECHNICAL WORK DOCUMENTS (eTWD): eTWD Software Development	2	2017	4	2017
ELECTRONIC TECHNICAL WORK DOCUMENTS (eTWD): AIM Changes	2	2017	2	2018
ELECTRONIC TECHNICAL WORK DOCUMENTS (eTWD): eTWD Implementation	4	2018	4	2018
PROJECT SEQUENCING & SCHEDULING (PSS) UPGRADE: PSS UPGRADE: PSS Upgrade Scheduling Improvement OEP Approval	4	2017	4	2017
PROJECT SEQUENCING & SCHEDULING (PSS) UPGRADE: PSS Upgrade Scheduling Improvement Analysis	4	2017	2	2018
PROJECT SEQUENCING & SCHEDULING (PSS) UPGRADE: PSS Upgrade Scheduling Improvement Software Development	2	2018	4	2018
PROJECT SEQUENCING & SCHEDULING (PSS) UPGRADE: PSS Upgrade Scheduling Improvement Testing & Documentation	4	2018	2	2019
PROJECT SEQUENCING & SCHEDULING (PSS) UPGRADE: PSS Upgrade Scheduling Improvement Implementation	3	2019	3	2019
PAGE THREE - Migration, Consolidation & Enhancements				
PLANNED MAINTENANCE SYSTEM (PMS): PMS UPGRADE: PMS Upgrade OEP Approval	2	2017	2	2017
PLANNED MAINTENANCE SYSTEM (PMS): PMS UPGRADE: PMS Upgrade Analysis	2	2017	4	2017
PLANNED MAINTENANCE SYSTEM (PMS): PMS UPGRADE: PMS Upgrade Software Development	3	2017	4	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
PLANNED MAINTENANCE SYSTEM (PMS): PMS UPGRADE: PMS Upgrade Testing & Documentation	4	2017	3	2018
PLANNED MAINTENANCE SYSTEM (PMS): PMS UPGRADE: PMS Upgrade Implementation	4	2018	4	2018
PAGE FOUR - Migration, Consolidation & Enhancements CONTINUED				
STRATEGIC PLANNING/FORECASTING (SPF): SPF UPGRADE: SPF UPGRADE OEP Approval	4	2017	4	2017
STRATEGIC PLANNING/FORECASTING (SPF): SPF UPGRADE: SPF UPGRADE Analysis	1	2018	3	2018
STRATEGIC PLANNING/FORECASTING (SPF): SPF UPGRADE: SPF UPGRADE Software Development	3	2018	1	2019
STRATEGIC PLANNING/FORECASTING (SPF): SPF UPGRADE: SPF UPGRADE Testing & Documentation	2	2019	4	2019
STRATEGIC PLANNING/FORECASTING (SPF): SPF UPGRADE: SPF UPGRADE Implementation	4	2019	4	2019
NMMES Technical Refresh: NMMES Technical Refresh Advanced Planning	1	2016	1	2016
NMMES Technical Refresh: NMMES Technical Refresh OEP Approval	4	2016	4	2016
NMMES Technical Refresh: NMMES Technical Refresh Alternative Analysis	3	2016	2	2017
NMMES Technical Refresh: NMMES Technical Refresh Solution Analysis	2	2017	2	2018
NMMES Technical Refresh: NMMES Technical Refresh Software Development	3	2018	4	2020
NMMES Technical Refresh: NMMES Technical Refresh Testing & Documentation	1	2021	4	2021
NMMES Technical Refresh: NMMES Technical Refresh Implementation	4	2022	4	2022
PAGE FIVE- Migration, Consolidation & Enhancements CONTINUED				
FINANCIAL TECHNICAL UPGRADE: Financial Tech Upgrade OEP Approval	4	2017	4	2017
FINANCIAL TECHNICAL UPGRADE: Financial Tech Upgrade Analysis	4	2017	2	2018
FINANCIAL TECHNICAL UPGRADE: Financial Tech Upgrade Software Development	2	2018	4	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
FINANCIAL TECHNICAL UPGRADE: Financial Tech Upgrade Testing & Documentation	4	2018	2	2019
FINANCIAL TECHNICAL UPGRADE: Financial Tech Upgrade Implementation	3	2019	3	2019
PAGE SIX- Migration, Consolidation & Enhancements CONTINUED				
MATERIAL MANAGEMENT UPGRADE: Material Mgmt Upgrade OEP Approval	4	2017	4	2017
MATERIAL MANAGEMENT UPGRADE: Material Mgmt Upgrade Analysis	1	2018	2	2018
MATERIAL MANAGEMENT UPGRADE: Material Mgmt Upgrade Software Development	3	2018	2	2019
MATERIAL MANAGEMENT UPGRADE: Material Mgmt Upgrade Testing & Documentation	2	2019	4	2020
MATERIAL MANAGEMENT UPGRADE: Material Mgmt Upgrade Implementation	4	2020	4	2020
PAGE SEVEN- Migration, Consolidation & Enhancements CONTINUED				
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): Database Optimization: OEP Approval	1	2018	1	2018
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): Database Optimization: Analysis	4	2017	2	2018
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): Database Optimization: Software Development	3	2018	1	2019
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): Database Optimization: Testing & Documentation	2	2019	3	2019
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): Database Optimization: Implementation	4	2019	4	2019
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): SUPDESK Timekeeping: SUPDESK: OEP Approval	4	2017	4	2017
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): SUPDESK Timekeeping: SUPDESK: Analysis	1	2018	2	2018
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): SUPDESK Timekeeping: SUPDESK: Software Development	3	2018	1	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): SUPDESK Timekeeping: SUPDESK: Testing & Documentation	1	2019	2	2019
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): SUPDESK Timekeeping: SUPDESK: Implementation	3	2019	3	2019
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): Local Application Rationalization: Local APP/RAT: OEP Approval	4	2017	4	2017
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): Local Application Rationalization: Local APP/RAT: Analysis	1	2018	3	2018
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): Local Application Rationalization: Local APP/RAT: Software Development	4	2018	2	2019
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): Local Application Rationalization: Local APP/RAT: Testing & Documentation	2	2019	3	2019
NMMES MARITIME SYSTEMS ENVIRONMENT (MSE): Local Application Rationalization: Local APP/RAT: Implementation	4	2019	4	2019

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2905.: *BUPERS IT*	45.011	12.879	29.664	52.957	-	52.957	65.959	74.545	59.118	35.310	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The large increase in the FY18 profile stems from the decision to invest in programs that directly align with the Sailor 2025 vision for modernization of the personnel system and transition to ready, relevant learning. The most significant increase stems from NSIPS, which in FY18 will complete its acquisition processes and award its first task order for Pay Modernization (PayMod), and also includes an add in support of the DoD Force of the Future for a Navy Active Component (AC)/Reserve Component (RC) Permeability Solution to; (1) extend the reach for soliciting candidates for Navy jobs, (2) streamline the internal processes and supporting technologies to ensure timely payment for personnel who transition between AC, RC, Government civilian or contractor jobs, and (3) improve the Navy's ability to support Component Commanders with rapid requirements posting and talent acquisition for emergent needs. The remaining increase is due to the increase in LMS-DL transitioning the Collaborative Learning Environment Product from a limited prototype to full production capability.

BILLET BASED DISTRIBUTION (BBD)

BBD increase in FY18 is a Sailor 2025 initiative aimed at modernizing distribution and order writing systems. The effort begins functional work and follow-on development to collapse NROWS, NMCMPS, EAIS, and OAIS into a single distribution system.

The objective of BBD is to increase personnel readiness, improve fit and provide clear visibility to the impact on mission readiness at the billet level. BBD will facilitate maximizing the contributions of every member of the Navy workforce by delivering competency-based career paths.

LEARNING MANAGEMENT SYSTEM - DISTANCE LEARNING (LMS-DL)

LMS-DL increase in FY18 is a Sailor 2025 initiative supporting ready relevant learning, with a focus to align Navy learning, create a career learning continuum, and leverage evolving technologies to expand learning solutions when and where the Sailor needs them. The collaborative learning environment (CLE) is a key component within the learning IT strategy that leverages Commercial-Off-the-Shelf products to integrate the CLE with intelligent tutors, a multi-purpose reconfigurable training system (MRTS), electronic classrooms (ECR), trainers and labs, interactive multimedia instruction (IMI), instructors, and a virtual environment. The increase in FY18 is to transition the pilot capability from FY17 into a production capability.

As part of Sailor 2025 holistic IT approach, ready & relevant learning requires the development of a Learning Management System that permits:

(1) Mobile & flexible delivery of modular training to the sailor
(2) Synchronization of work requirements with learning modules to ensure proper training is delivered at the right time

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This funding will develop and deploy new technologies for modularized training in fleet concentration areas to support the continuum of learning. This includes:

(1) Development, modification or replacement of the current LMS platform
(2) Integration of Manpower, Personnel, Training, and Education (MPTE) management tools to support end to end business processes (billet information, assignment, distribution, student management, learning management, personnel information, advancement) that will be impacted by changes to learning delivery and career profiles via Progressive Navy Enlisted Classifications (e.g. Total Force Manpower Management System, Navy Standard Integrated Personnel System, Learning Assessment System, Navy Training Management Planning System) .

The Learning Management tools and supporting IT infrastructure must also be modified to support management of training into the Delayed Entry Program, the growing use of demonstration videos, social media, student and learning management for MPTE mobility efforts, gaming and simulation technology as it is brought on-line.

LMS-DL will also introduce the Learning Continuum Pilot, a risk reduction effort that develops proof of concept alignment of sailor training requirements with learning content delivery.

MY NAVY PORTAL (MNP)
MNP is building an integrated web portal that consolidates the Navy's Human Resource portals, knowledge, and applications into a single and simplified user experience. Through the use of a multi-phased development approach, MNP will provide an intuitive self-service single point of entry for Sailors to view and manage their personnel and career information. MNP provides Active and Reserve Sailors with personalized interactive experiences and allows access to relevant information including learning content, human resource applications, and career business processes.

MNP Phase 2C continues to mature eleven Career Life Event (CLE) capabilities. Phase 2C continues requirements refinement work with key Fleet stakeholders and integrates or develops the identified CLEs.

My Navy Portal may address previously deferred requirements from prior phases. Should MNP exceed schedule/delivery, planned follow-on phases or activities may be accelerated.

ANALYSIS OF ALTERNATIVE/ECONOMIC ANALYSIS (AOA)
The Navy will conduct multiple AoAs to analyze viable alternatives in order to determine the most efficient and effective solution to address the modernization of elements of the Navy's Manpower, Personnel, Training and Education (MPTE) IT portfolio. AOA will assess operational effectiveness, suitability, and costs of non-tactical systems to meet emerging capability requirements.

NAVY STANDARD INTEGRATED PERSONNEL SYSTEM (NSIPS)

NSIPS increase in FY18 is aligned with the Sailor 2025 initiative to modernize personnel systems. The substantial increase is attributed to the planned start of the Pay Modernization (PayMod) program, and also includes an add in support of the DoD Force of the Future for a Navy AC/RC Permeability Solution to; (1) extend the

reach for soliciting candidates for Navy jobs, (2) streamline the internal processes and supporting technologies to ensure timely payment for personnel who transition between AC, RC, Government civilian or contractor jobs, and (3) improve the Navy's ability to support Component Commanders with rapid requirements posting and talent acquisition for emergent needs.

NSIPS facilitates the Navy's portion of the largest Federal PeopleSoft Human Resources implementation, providing the Navy with a systematic modernization of our web-based pay and personnel system - both afloat and ashore. NSIPS collects, validates, processes and transfers the data necessary to ensure accurate and timely pay and maintenance of personnel records.

Pay Modernization (Pay Mod) will integrate the PeopleSoft Global Payroll solution with Navy Standard Integrated Personnel System (NSIPS) to provide an integrated Personnel and Pay solution for the Navy. Pay Mod will improve efficiency by eliminating current Defense Joint Military Pay System (DJMS) workarounds, improve business intelligence by providing real-time access to pay data, and improve auditability by having authoritative data in an integrated personnel and pay capability. Pay Mod is a solution to make more efficient use of military member time and funding for pay of active and reserve personnel.

Determining the retirement eligibility for Navy active duty service with both Active Component (AC) and Reserve Component (RC) time is complicated by the fact the computation has to be performed manually and requires consultation with numerous data sources. Current solutions make it difficult to account for who is on active duty at any point in time and time-in-grade calculations for Selected Reserve (SELRES) personnel. OPNAV N1 need the reports and data for budget execution as well as strength reporting to leadership and Congress. Limitations in both payroll processes and systems induce a lapse between orders to effect change in status. SELRES personnel gained to Active Duty Special Work (ADSW) incur a delay in pay stemming from issues with loss/gain timing in systems. SELRES personnel who re-enlist while on active duty orders are not retained when transitioning back to SELRES, and there is no retention of active duty Career History for Reserve personnel. The Navy AC/RC Permeability Solution will be included in the Manpower, Personnel, Training and Education (MPTE) Transformation effort to leverage data in the authoritative data environment, modernize personnel and pay systems, and provide modern commercial solutions to; (1) extend the reach for soliciting candidates for Navy jobs, (2) streamline the internal processes and supporting technologies to ensure timely payment for personnel who transition between AC, RC, Government civilian or contractor jobs, and (3) improve the Navy's ability to support Component Commanders with rapid requirements posting and talent acquisition for emergent needs.

NAVY MANPOWER REQUIREMENTS SYSTEM (NMRS)

NMRS will modernize obsolete software and incorporate a wide array of enhancements (expanded capabilities based on sponsor's approved Functional Requirements Document) of new capabilities in support of Manpower Requirement efficiencies. Should NMRS deliver early, planned follow-on milestones may be accelerated.

NMRS is a key tool which Navy manpower managers rely on to set, implement, and execute manpower requirements. Recommendations for improving data bases and the Navy's mobilization capacity rely on NMRS to make strength determinations.

The planned effort also includes technical evaluation and integration of products produced by the Simulation Toolset for Analysis of Mission, Personnel and Systems (STAMPS) program.

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RISK MANAGEMENT INFORMATION (RMI)
The RMI program is a consolidation of DON risk management requirements into a single Program of Record (POR) to provide modern safety reporting and management capabilities for both active and reserve Navy and Marine Corps commands. RMI enables agile responses to business rule changes, automation of routine actions, improved data integrity, and facilitates self-service for organizations and individuals.

RMI is being developed in three increments of capabilities: Streamlined Incident Reporting (SIR), Safety Program Management (SPM), and Analysis & Dissemination (A&D). A fourth requirement, Single Point of Entry (SPOE), will be accomplished as part of the development of the three RMI increments since each will be built on the same Commercial Off The Shelf (COTS) platform. Each of these capabilities will be acquired as individual Abbreviated Acquisition Programs using an incremental development approach for reengineered business processes, while consolidating five legacy systems [Web-Enabled Safety System (WESS), Enterprise Safety Application Management Systems (ESAMS), Portsmouth Occupational Accident and Illness Reporting System (POAIRS), Medical Mishap and Compensation (MMAC), and Injury Tracker (INJTRK)].

AUTHORITATIVE DATA ENVIRONMENT (ADE)

ADE increase in FY18 is a Sailor 2025 initiative aimed at transitioning the current project based ADE into a full enterprise solution that is based on modern IT service models and cloud hosting technology. This specific increase will advance data analytics and visualization capabilities, and add common platform services in a big data environment that is consistent with private industry. This acceleration toward a true Navy-wide personnel authoritative data environment is a transformational increase in capability for decision support and improving personnel readiness.

As part of the Sailor 2025 strategy, the Chief of Naval Personnel has directed an acceleration of expansion and development of the ADE and improvements in making MPTE data more available to commanders, sailors, business owners and MPTE and fleet executive leadership. The ADE provides infrastructure, operations and sustainment of the Navy MPTE Authoritative Data Warehouse(ADW), enterprise service bus, and web support services.

The capabilities delivered by this funding includes the following:
(1) Completed "golden record" expansion increments
- Data quality
- Governance
- Security
- Data standardization

(2) Increased capabilities for MPTE supply chain & business operations
- Data discovery
- Advanced visualization tools
- Predictive analytics

(3) Enhanced architecture to support unstructured data and "big data" analytics
(4) Improved support for future identity management & access for mobile device capability

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APPLICANT RELATIONSHIP MANAGEMENT (ARM)
ARM provides automated support of the management of recruiting information. ARM enables all levels of recruiting to have real-time access to timely and accurate information. ARM provides managers with decision-making support by consolidating Navy Recruiting Command (NRC) legacy application systems. The complete ARM Systems Dev/Mod effort will incorporate biometrics and paperless implementation across all lines of business systems to gain additional efficiencies.

Included in the ARM program is the Self Service Accessions Application (SSAA). Phase II of this effort will build the SSAA application into the ARM system. SSAA is a mobile device-based software application. SSAA supports a change in the NRC business processes from a recruiter-driven business model to an applicant self-service business model. This "app" will be used by applicants to collaborate with recruiters anytime & anywhere to more efficiently and effectively navigate the recruiting process.
Funding associated with Personnel TEMPO (PERSTEMPO) is being aligned to PE 060513N 2905 beginning in FY15. This aligns the funds with the organization required to execute PERSTEMPO strategy as directed by the CNO to the CNP. Two components are rolled together, modifying the ITEMPO system and further developing the Navy Deployment Health Location process. This strategy consists of Business Process Re-engineering (BPR) defined requirements (artifact is a Functional Requirements Document-FRD), modernization/risk reduction of existing system (ITEMPO) and a process that uses our corporate systems at DMDC Mechanicsburg.

The desired effects of PERSTEMPO strategy are:
- Generate efficiencies throughout the Fleet to meet statutory requirements and improve Fleet readiness.
- Provide improved service to Sailors (improving retention).
- Facilitate informed management decision making.

Associated sub-projects:

Individual TEMPO (ITEMPO): PERSTEMPO was implemented to comply with Sections 586 and 923 of the FY00 NDAA, now within 10 USCS 991. This is a non-acquisition category program. Each military service is to track and manage the number of deployed days and number of temporary duty days away from homeport for active and reserve personnel. Information is reported to DoD/DMDC, which is used to report to the Secretary of Defense. ITEMPO is the system used to comply with these directives. PERSTEMPO supports Navy management of stress on the force as requested by the CNO; Commander, U.S. Fleet Forces Command (N1); and the Commander, U.S. Pacific Fleet (N1). Enhancements will be performed on the primitive ITEMPO functional tools/metrics to make it actionable, current in technology, user friendly, and integrated into a variety of personnel and pay systems. Preparations are already underway to complete the FRD and perform a gap analysis within existing resources. This will support pay auditability/certainty when payment is authorized.

DEPLOYMENT HEALTH LOCATION: Deployment Health Location is being implemented per DoD Instruction 6490.03, "Deployment Health," (DoD Instruction) August 11, 2006. This requires the Military Departments to plan, program, and implement a system to ensure daily location recording for all deployed personnel assigned, attached on temporary duty, or temporary additional duty to deployed units. The Services are required to report the daily location information electronically to DMDC at least weekly. Also, this will correct the finding by DoD Inspector General Report NO. DODIG 2012-112 of Jul 18, 2012.

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Capability change for ITEMPO: The system has had no significant software change in more than 8 years. The report mechanisms are extremely antiquated.

Capability change Deployment Health Location: Deployed Service members are potentially subject to occupational and environmental hazards that can include exposure to harmful levels of environmental contaminants, such as industrial toxic chemicals, chemical and biological warfare agents, or radiological and nuclear contaminants. These hazards may include contamination from the past use of a site, battle damage, stored stockpiles, military use of hazardous materials, or from other sources. Harmful levels include high-level exposures that result in immediate health effects and low-level exposures that could result in delayed or long-term health effects. Collecting deployment information will allow the Military Health System to identify populations at risk for occupational and environmental exposures that may need medical follow-up. Improving timeliness of treatment will have a positive effect on readiness and long-term wounded warrior care.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Billet Based Distribution (BBD)	0.932	2.140	4.860	0.000	4.860
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Completed the requirements analysis, design and software development of BBD Phase 1C Increment 1.					
FY 2017 Plans: Continue the testing and deployment of BBD Phase 1C Increment 1 and begin requirements analysis, design and development of BBD Phase 1C Increment 2. This activity may also address previously deferred requirements from Phase 1B. Should the program deliver early, planned follow-on phases may be accelerated or additional capability may be incorporated into the delivery.					
FY 2018 Base Plans: Complete testing and deployment of BBD Phase 1C. Begin requirements analysis, design and development of BBD Phase 2 Enlisted Optimization and Slating and Phase 2 Officer functionality.					
FY 2018 OCO Plans: N/A					
Title: Learning Management System - Distance Learning (LMS-DL)	0.000	3.750	5.606	0.000	5.606
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Development of two pilot projects for assessing the technical changes needed to fully integrate Learning Continuum Requirements across MPTE IT systems.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
1. Conduct Learning Continuum Phase I LMS Pilot to integrate the LMS with virtual classroom technology, Learning Assessment System, CeTARS, and the electronic training jacket. The Learning Continuum Phase I LMS Pilot will also evaluate technical options for adding Resume Capture for new training media that requires student tracking (e.g. mobile applications, videos & simulations). 2. Perform Risk Reduction Pilot on migrating AtlasPro LMS to NSIPS PeopleSoft LMS and test end to end business process scenarios to identify technical changes required to interfacing systems. ***FY 2018 Base Plans:*** 1. Completion of pilot project review and assessments 2. Design, design review, testing, production readiness, and deployment of Career Profile functionality 3. Procure and standup Collaborative Learning Environment (CLE) for enterprise based on pilot results ***FY 2018 OCO Plans:*** N/A					
Title: My Navy Portal (MNP)	3.654	3.269	4.290	0.000	4.290
Articles:	-	-	-	-	-
FY 2016 Accomplishments: 1. Commenced MNP Phase 2C Development - Designed Portlets Supporting Prioritization of Sailor Career Life Event (CLE) Tasks - Connected CLEs to other Capabilities & Interfaces - Provided Seamless HR Support Mechanism for Sailors - Used HR Support Mechanism to Reduce Time Sailors Spend Performing Administrative Tasks 2. Visually displayed Authoritative Data Environment (ADE) information to compose a Sailor's Record. Each CLE sprint includes a development, testing and release phase to provide Sailors with incremental capability. The first set of CLEs include the following: - Personnel Records - Enlisted and Officer Advancement - Training and Readiness - Physical Fitness - Certifications and Qualifications - Pay					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Leave - Travel - "New to the Navy" - Retention ***FY 2017 Plans:*** Continue to accelerate and broaden the development of CLE capabilities for sailors to manage their career based on CNP's Sailor 2025 initiative. Accomplish the following tasks: 1. Development of MNP mobile applications 2. Update MNP mobile applications required to meet dynamic user and stakeholder needs (develop and/or integrate proposed portlet/app) 3. Accelerate MNP Phase 2C development in other CLE areas, and potentially begin the next phase of MNP to deliver operational capability to sailors sooner 4. Increase development and integration of identified CLE portlets 5. Finalize platform for MNP preferred ashore hosting solution Additionally MNP may address previously deferred requirements from prior program deliveries and phases. Should the program deliver early, planned follow-on phases may be accelerated. ***FY 2018 Base Plans:*** 1. Continue the development and integration of portal CLE portlet capabilities for Sailors to manage their careers in an intuitive self-service web environment. 2. Provide on-going training and support to identified MNP content and page administrators who must be trained on the new capability being developed for each incremental release of new MNP capability. 3. Integrate with MPTE applications and capabilities. MNP functional users and sponsors continue to shift their priorities for MNP integration with outside systems. Those outside system integrations require new MNP development/modernization code builds to enable MNP to successfully partner with them. 4. Support development of a cloud MNP hosting solution. MNP requires new development/modernization of its underlying architecture to function properly once migrated to the cloud hosting platform. ***FY 2018 OCO Plans:*** N/A					
Title: Total Force Manpower Management System (TFMMS)	1.367	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Tested and deployed Iteration 2 ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Analysis of Alternative Economic Analysis (AOA EA) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** 1. Analysis of Alternative (AoA) of material solutions for emerging business IT requirements 2. Begin AoA for Personnel Accountability Processes 3. Begin personnel manpower analysis for 2025 Sailor toolkit 4. Complete AoA of the viability of converting MPT&E IT systems to cloud services ***FY 2018 Base Plans:*** 1. Complete AoA for cloud transition Courses Of Action (COA) 2. Complete AoA for personnel accountability processes 3. Complete AoA for personnel manpower analysis for Sailor 2025 4. Non-AoA studies and analyses encompassing the MPT&E enterprise. ***FY 2018 OCO Plans:*** N/A	0.000 -	0.800 -	0.700 -	0.000 -	0.700 -
Title: Navy Manpower Requirements System (NMRS) ***Articles:*** ***FY 2016 Accomplishments:***	0.000 -	3.378 -	2.000 -	0.000 -	2.000 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** 1. Award Contract, Post Award Conference, and kick off project 2. Complete SFR/SRR 3. Complete PDR ***FY 2018 Base Plans:*** 1. Complete design phase 2. Conduct development phase 3. Complete CDR 4. Initiate system testing NMRS will begin design and development of the new capabilities of the Fleet Manpower Requirements Document (FMRD) that will improve the Navy's ability to forecast/determine/implement manpower requests for the Navy. Additionally, NMRS will integrate enhanced functionality from the Simulation Toolset for Analysis of Mission, Personnel and Systems (STAMPS) S&T effort, merging the new product into a single cohesive manpower system within TFMMS. Testing will ensure that the developed design for the enhanced NMRS/ Manpower system meets all requirements. ***FY 2018 OCO Plans:*** N/A					
Title: Navy Standard Integrated Personnel System (NSIPS)	3.702	4.450	23.845	0.000	23.845
Articles:	-	-	-	-	-
FY 2016 Accomplishments: 1. Completed application testing for Iteration 1 functionality (Review/Approval Process) 2. Deployed Iteration 1 to the NSIPS production environment 3. Completed Critical Design Review (CDR) for Iteration 2 functionality (Separations Process) 4. Completed application testing for Iteration 2 functionality (Separations Process) 5. Deployed Iteration 2 to the NSIPS production environment 6. Completed Critical Design Review (CDR) for Iteration 3 functionality (Forms/Reports) 7. Completed application testing for Iteration 3 functionality (Forms/Reports) 8. Deployed Iteration 3 to the NSIPS production environment 9. Paid Navy share of Tri-Service PeopleSoft license					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
10. Awarded task order for prioritized and/or deferred software changes in the areas below requiring development / modernization: - Selection Board Preparation - Personnel Appraisal - Personnel Accountability					
FY 2017 Plans: 1. Bi-Service PeopleSoft license acquisition 2. Continue the implementation of the strategy in completing deferred software changes related to retirements, separations, selection board preparation, personnel appraisal, and personnel accountability that require development and modernization; and implement improved modernized personnel processes Award contract, perform requirements analysis and system design for all increments.					
FY 2018 Base Plans: NSIPS increase in FY18 is aligned with the Sailor 2025 initiative to modernize personnel systems. The substantial increase is attributed to the planned start of the Pay Modernization (PayMod) program, and also includes an add in support of the DoD Force of the Future for a Navy AC/RC Permeability Solution to; (1) extend the reach for soliciting candidates for Navy jobs, (2) streamline the internal processes and supporting technologies to ensure timely payment for personnel who transition between AC, RC, Government civilian or contractor jobs, and (3) improve the Navy's ability to support Component Commanders with rapid requirements posting and talent acquisition for emergent needs. 1. Bi-Service PeopleSoft license acquisition 2. Continuation of FY17 effort to implement strategy in completing deferred software changes related to retirements, separations, selection board preparation, personnel appraisal, and personnel accountability that require development and modernization; and implement improved modernized personnel processes 3. In FY18, PAYMOD will complete its acquisition processes and award its first Task Order to develop increment 1, which focuses on creating a PeopleSoft Global Payroll baseline and implementing the initial modernized military pay capabilities.					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
4. Complete fit/gap analysis of the permeability functional requirements to personnel, pay, and authoritative data environment requirements. Solicit and award contract or task order and complete the System Requirements Review/System Functional Review (SRR/SFR). ***FY 2018 OCO Plans:*** N/A					
Title: Risk Management Information (RMI) ***Articles:*** ***FY 2016 Accomplishments:*** 1. Completed Phase I Design and Testing for Analysis & Dissemination (A&D) 2. Completed Test Readiness and Production Readiness Reviews for Streamline Incident Reporting (SIR). Full deployment begins in FY16 for SIR. ***FY 2017 Plans:*** 1. Complete contract award, design, systems requirement reviews, and preliminary design reviews for Safety Program Management (SPM). 2. Complete testing, post implementation, and begin full deployment for Phase I Analysis and Dissemination (A&D). Complete award and design of Phase II of A&D. ***FY 2018 Base Plans:*** 1. Complete design and implement Safety Program Management (SPM) configuration and interfaces. 2. Complete Phase I Analysis and Dissemination (A&D) to include configuration of SPM reports and metrics 3. Begin implementation of Phase II A&D. ***FY 2018 OCO Plans:*** N/A	1.960 -	2.761 -	1.100 -	0.000 -	1.100 -
Title: Authoritative Data Environment (ADE) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** 1. Selection and Implementation of the technology platform for Production Deployment	0.000 -	4.700 -	9.800 -	0.000 -	9.800 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
2. Commence People Common Operational Picture (COP) Phase I - Supply Chain Management & MPTE Analytic, Visualization and Information Services - Design - Configuration - Integration - Testing - Deployment FY17 will fund the design, configuration, integration and testing of Phase I of the ADE program: Supply Chain Management & MPTE Analytic, Visualization and Information Services. Funding will also be for the deployment of the ADE Phase I prototype. This is a new start in FY17. ***FY 2018 Base Plans:*** 1. FY18 funds will be used for Phase 2 engineering design, development, testing and supporting infrastructure to incorporate additional MPTE data warehouse programs into the ADE baseline, expanding on the current Enterprise Service Bus (ESB) and application programming interface (API) tools. 2. FY18 will also procure data migration services to affect the moves of source data into the new enterprise baseline instance. ***FY 2018 OCO Plans:*** N/A					
Title: Applicant Relationship Management (ARM) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** 1. Conduct software requirement analyses leading up to Acceptance Test Readiness Review (ATRR) 2. Collect additional requirements volatility data resulting from ongoing requirement analyses 3. Implement modifications / upgrades resulting from requirements volatility data 4. Support officer and enlisted active and reserve Delayed Entry Program (DEP) enlistment & accession processing 5. Utilize workflow management to perform paperless processing 6. Create medical waiver workflow for officer and enlisted applicants within one system	0.000 -	4.416 -	0.556 -	0.000 -	0.556 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
7. Provide alerts, notifications, and email for increased efficiency 8. Create improved architecture for linking to United States Military Entrance Processing Command. ***FY 2018 Base Plans:*** 1. Conduct software requirement analyses leading up to Production Readiness Review (PRR) 2. Conduct regression testing for proper integration with earlier development efforts 3. Create improved audit management capability for increased efficiency 4. Provide enhanced user and data management capabilities to efficiently integrate Self Service Accessions Application (SSAA) ***FY 2018 OCO Plans:*** N/A					
Title: Recruiting Information System (NRIS) ***Articles:*** ***Description:*** The Recruiting Information System (NRIS) creates a holistic approach to Navy Accessions by integrating Recruiter and Applicant information in real-time and to appropriate Manpower, Personnel, Training, and Education DoD business systems. Combined with Mobile Recruiter Initiative (MRI), the NRIS family of web enabled systems extends the recruiting force point-of-presence and key business processes to the field; facilitates real-time data sharing and paperless processing across the Accessions supply chain; and drives down the total number of transactions required to transition from street to fleet. NRIS supports the active and reserve component, enlisted and officer accessions processes and includes system interfaces that eliminate multiple data entry and reduces errors. Interface partners include CeTARS (book school seats and initial strength gain), MIRS/eSOA (schedule applicants for physicals and testing at MEPS) and NSIPS (start the initial personnel record). NRIS encompasses PRIDE Modernization-I, WebRTools, CIRIMS and NASIS; and will include PRIDE Modernization-II and ARM when deployed in FY15. The NRIS architecture provides the recruiting force with an agile, flexible, secure, and data-centric IT operating environment, the key building block for business transformation and supports the command's RF2030 strategy. ***FY 2016 Accomplishments:***	0.240 -	0.000 -	0.200 -	0.000 -	0.200 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Complete NRIS Development and deploy NRIS final capability. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Start/complete modification of PRIDE MOD II and ARM interface with Career Waypoint. ***FY 2018 OCO Plans:*** N/A					
Title: Personnel TEMPO (PERSTEMPO)	1.024	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The PERSTEMPO program consists of two components: Modifying the ITEMPO system and further developing the Navy Deployment Health Location process. This strategy consists of Business Process Re-engineering (BPR) defined requirements, modernization/risk reduction of existing system (ITEMPO) and a process that uses our corporate systems at DMDC Mechanicsburg. ITEMPO: PERSTEMPO was implemented to comply with Sections 586 and 923 of the FY00 NDAA, now within 10 USCS 991. This is a non-acquisition category program. Each military service is to track and manage the number of deployed days and number of temporary duty days away from homeport for active and reserve personnel. This information is reported to DoD/DMDC, which is used to report to the Secretary of Defense. ITEMPO is the system used to comply with these directives. PERSTEMPO supports Navy management of stress on the force as requested by the CNO; Commander, U.S. Fleet Forces Command (N1); and the Commander, U.S. Pacific Fleet (N1). Enhancements will be performed on the primitive ITEMPO functional tools/ metrics to make it actionable, current in technology, user friendly, and integrated into a variety of personnel and pay systems. Preparations are already underway to complete the FRD and perform a gap analysis within existing resources. This will support pay auditability/certainty when payment is authorized. DEPLOYMENT HEALTH LOCATION: Deployment Health Location is being implemented per DoD Instruction 6490.03, "Deployment Health," (DoD Instruction) August 11, 2006. This requires the Military Departments to plan, program, and implement a system to ensure daily location recording for all deployed personnel assigned, attached, on temporary duty, or temporary additional duty to deployed units. The Services are required to report					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
the daily location information electronically to DMDC at least on a weekly basis. Also, this will correct the finding by DoD Inspector General Report NO. DODIG 2012-112 of Jul 18, 2012. ***FY 2016 Accomplishments:*** - Complete modifications on the ITEMPO and Deployment Health Location development sub-projects, based on approved FRDs. - Complete advanced updates and enhancements (likely) to ITEMPO, allowing to transition the system to make it actionable, current in technology, user friendly, and integrated into a variety of personnel and pay systems. ***FY 2017 Plans:*** NA ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	12.879	29.664	52.957	0.000	52.957

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 8106: *Command Support Equipment*	0.573	0.536	2.755	-	2.755	2.007	2.005	0.596	1.830	0.000	22.426
• 8161: *Enterprise Information Technology*	3.177	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.177

Remarks

BLI 8106 funds for NSIPS. BLI 8161 funds for RMI.

D. Acquisition Strategy

As a general rule IT development programs use an agile software development methodology therefore milestones, tasks and phases are often conducted in parallel vice sequentially.

BILLET BASED DISTRIBUTION (BBD)

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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The required services will be procured through a Cost Plus Fixed Fee (CPFF) 8a contract and a competitive, multiple award, small business Indefinite Delivery / Indefinite Quantity (ID/IQ) contract task order.

LEARNING MANAGEMENT SYSTEM - DISTANCE LEARNING (LMS-DL)
Use existing GWAC or competitive contract for any new product sourcing, use existing Tri-Service PeopleSoft license, Indefinite Delivery/Indefinite Quantity contract vehicles within PMW 240 for additional design and integration services.

NAVY STANDARD INTEGRATED PERSONNEL SYSTEM (NSIPS)

Navy Standard Integrated Personnel System (NSIPS) will incrementally implement Navy's personnel and pay modernization strategy using a variety of IDIQ contract task orders. These task orders will use commercial off the shelf (COTS) software (PeopleSoft Global Payroll and PeopleSoft General Ledger) to extend the Navy Standard Integrated Personnel System (NSIPS), based on PeopleSoft Human Capital Management.

MY NAVY PORTAL (MNP)
The required services will be procured through a competitive small business Indefinite Delivery / Indefinite Quantity (ID/IQ) Cost Plus Fixed Fee (CPFF) 8a contract.

NAVY MANPOWER REQUIREMENTS SYSTEM (NMRS)
The required services will be procured through a Cost Plus Fixed Fee (CPFF) task order awarded on a competitive, multiple award, small business Indefinite Delivery / Indefinite Quantity (ID/IQ) contract.

RISK MANAGEMENT INFORMATION (RMI)
There are existing Commercial-Off-the-Shelf (COTS) software and services that, with customization, can fill the Navy's documentation requirements and generate safety reporting of the United States Naval forces. These services will be procured through an 8A CPFF contract.

The Navy plans to leverage Contractor developed safety-related products by using a modular contracting approach to implement and combine capabilities from the following systems.

(a) Streamlined Incident Reporting (SIR)
(b) Single Point of Entry (SPOE)
(c) Safety Program Management (SPM);
(d) Analysis & Dissemination (A&D)

AUTHORITATIVE DATA ENVIRONMENT (ADE)

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2905. / *BUPERS IT*

The required services will be procured through multiple Cost Plus Fixed Fee (CPFF) task orders awarded on a competitive, multiple award, small business Indefinite Delivery / Indefinite Quantity (ID/IQ) contract for PMW 240 enterprise services, and also on a competitive, single award, large business Indefinite Delivery / Indefinite Quantity (ID/IQ) contract for tasking related to personnel and pay modernization.

APPLICANT RELATIONSHIP MANAGEMENT (ARM)
CPFF contract using GOTS software solution.
(U) PERSTEMPO: Expect to use existing systems and build applications in those environments. Specifically for ITEMPO related costing, system resources are already existing within other system budget lines, and the OMN structure has been increased from FY2016 through the FYDP to sustain these changes. For Deployment Health Location, best system will be determined to host these attributes once the FRD is completed. For software development, the existing contract vehicles will be used, managing the work through separate sub contract line items (SLINs). Existing test resources will be used for testing software modifications.

E. Performance Metrics

BILLET BASED DISTRIBUTION (BBD)
Concurrent Users: 250 Users
Screen Refresh: 6-20 Seconds
System Recoverability: <=4 Hrs
System Interoperability: 95%
System Availability: >=95%

LEARNING MANAGEMENT SYSTEM - DISTANCE LEARNING (LMS-DL)
Capturing end user screen refresh latency as compared to current system benchmarks for on-line courses.
Identifying all integration points, failure modes and data flows required for the additional technology and approach
Identifying supply chain, instructional, and student management business process changes needed to employ the technology
Assessing server utilization and physical architecture projections (#s and types of hardware/SW/network appliances) needed for full scale use of the technology.

ANALYSIS OF ALTERNATIVE/ECONOMIC ANALYSIS (AOA)
Produce assessments for 95% of required AoAs.

NAVY STANDARD INTEGRATED PERSONNEL SYSTEM (NSIPS)
The system shall allow role-based access to SSN and/or masked SSN in accordance with Personally Identifiable Information (PII) instructions 100% of the time.
The system shall have a retrieval or generation of data entry/navigation screen within 4 seconds for 90% of transactions.
System maintainability - Failures or unplanned outages shall be restored within 4 hours.
The system shall have sufficient capacity to handle anticipated user demand based on increased functionality and accessibility for at least 12,000 simultaneous users.
Data consistency - The system shall produce consistent reports when a query is duplicated using identical user-selected parameters, to include the specific timestamp of the query. System will be within 99% accuracy in replicating the report content.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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Data accuracy - The system shall generate forms and accurately populate them with authoritative source data with greater than 99% accuracy between the data auto-populated forms and the data contained within the system.

MY NAVY PORTAL (MNP)
MNP will meet acquisition program and system engineering and technical review milestones for development with no outstanding severity 1-3 defects prior to production release. The portal will manage at least 50,000 concurrent actions per hour and 200,000 concurrent users per hour.

NAVY MANPOWER REQUIREMENTS SYSTEM (NMRS)
Security- No identified / open findings without documentation of implemented mitigations and a remediation plan. No residual CAT I findings, or risk aggregation to CAT I.
Concurrent Users - A minimum of 35 concurrent users without degradation of system performance.
Transactions - 98% of transactions completed successfully
System Reliability - Edit failures transmitted data that are not detected automatically and require field level manual intervention to correct in less than 2% of all transactions.
System Availability - Available 95% of the time.
Reporting - System must generate, populate, and display simple reports within ten seconds and complex reports within two minutes.
Queries - System must have the ability to execute simple queries within ten seconds and complex queries within fifteen seconds.
Screen Refresh - System shall have the ability to perform a screen refresh invoked by the user within fifteen seconds of submission.
Navigation - System shall have the ability to navigate between hierarchy levels while utilizing the map within ten seconds of each instance of level change.

RISK MANAGEMENT INFORMATION (RMI)
Safety Incident Reporting Functionality - The system shall provide the ability to utilize RMI mishap, near mishap, and hazard initial notification, report drafting, report submission, report endorsement, and mishap recommendation / action item response and tracking functionality for at least 95% of Navy and Marine Corps operational ground forces, shore commands, surface forces, aviation forces, and submarine forces
Incident Data Capture - The system shall capture safety incident report data 100% of the time.
Security - The system shall protect flagged Safety Privilege, Personally Identifiable Information (PII), and Protected Health Information (PHI), and allow only role-based access in accordance with law, regulation and policy (LRP) instructions. 100% of flagged Safety Privilege, PII, and PHI data shall be protected from unauthorized roles and tacit export.
Registered Users - The system shall support user account access for Navy and Marine Corps members and safety support users for all safety user types = (administrative, power, occasional, and infrequent)
Concurrent Active Users - The system shall have sufficient capacity to support concurrent active users or greater than 20% of all safety users.
Response Time - Data requests/queries, reports, building of custom views, etc. shall not significantly impact transaction processing time. All items will be processed within 1 second or less for 90% of requests and 3 seconds or less for 10% of single record requests.

AUTHORITATIVE DATA ENVIRONMENT (ADE)

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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The system shall provide an audit trail for all system transactions.
The system shall transfer data payloads of up to 1 megabyte (MB) among services.
The system shall transfer data transactions of up to 1 MB among applications.
The system shall allow any authorized application or system to insert data.
The system shall provide CAC-enabled login for identity management.

APPLICANT RELATIONSHIP MANAGEMENT (ARM)
The system shall have the ability to perform simple queries and present data to the user within five seconds upon submission.
ARM shall have no architectural limitations that would preclude a minimum of 5,000 concurrent users.
The system response time will support an experienced classifier making at least ten classifications per hour.
The ARM system shall auto save information entered by a recruiter while the information is being entered without degradation of system responsiveness.
(U) 2905 PERSTEMPO: Meet program system engineering and technical review milestones for development with no outstanding severity 1-3 defects for production release.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BBD Phase 1c Increment 1 and 2, Phasde 2	C/CPFF	SSC, INC : New Orleans, LA	8.613	0.932	Dec 2015	2.140	Dec 2016	4.860	Dec 2017	-		4.860	Continuing	Continuing	Continuing
LMS-DL Pilot and Career Profile Management	C/CPFF	TBD : Pensacola, FL	1.801	0.000		3.750	Jun 2017	5.606	Jun 2018	-		5.606	Continuing	Continuing	Continuing
MNP Phase 2A/B/C Design, Development, Test & Deployment	C/CPFF	Katmai : Arlington, VA	6.501	3.654	Nov 2015	3.269	Nov 2016	4.290	Jul 2018	-		4.290	Continuing	Continuing	Continuing
TFMMS Design, Development, Test & Deployment (2 Increments)	C/CPFF	A3IS : Palm Coast, FL	5.252	1.367	Feb 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
PRIDE MOD II Design, Development, Test & Deployment	C/CPFF	CGI, Fed : Washington, DC	2.185	0.000		0.000		0.000		-		0.000	0.000	2.185	1.370
AOA Design, Development, Test & Deployment	C/CPFF	TBD : New Orleans, LA	0.992	0.000		0.800	Mar 2017	0.700	Mar 2018	-		0.700	Continuing	Continuing	Continuing
NSIPS PERSMOD Deferred SCRs Design, Development, Test & Deployment	C/CPFF	CSRA : Washington, DC	8.537	1.279	Jan 2016	0.867	Jan 2017	20.262	Jan 2018	-		20.262	Continuing	Continuing	Continuing
NMRS Design, Development, Test & Deployment	C/CPFF	TBD : New Orleans, LA	0.000	0.000		3.378	May 2017	2.000	May 2018	-		2.000	Continuing	Continuing	Continuing
RMI SIR/SPOE/SPM/A&D Design, Development, Test & Deployment	C/CPFF	Syneren : Arlington, VA	3.930	1.960	Jun 2016	2.761	Jun 2017	1.100	Jul 2018	-		1.100	Continuing	Continuing	Continuing
ADE - BI / Visualization / Analytics Products	C/CPFF	CSRA : Washington, D.C.	0.000	0.000		3.500	Jul 2017	5.500	Jul 2018	-		5.500	Continuing	Continuing	Continuing
ADE - System Integration	C/CPFF	CSRA : Washington, D.C.	0.000	0.000		1.200	May 2017	4.300	May 2018	-		4.300	Continuing	Continuing	Continuing
ARM Phase 1-3 Design, Development, Test & Deployment	C/CPFF	HP : Orlando, FL	0.000	0.000	Dec 2015	4.416	Dec 2016	0.556	Dec 2017	-		0.556	0.000	4.972	2.221

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PERSTEMPO System Design, Engineering, and Development	C/CPFF	FLC Philadelphia : Philadelphia, PA	0.000	1.024	Sep 2016	0.000		0.000		-		0.000	0.000	1.024	-
Recruiting Information System (NRIS)	C/CPFF	CGI Federal, Inc : Fairfax, VA	0.000	0.240	Oct 2015	0.000		0.200	Jan 2018	-		0.200	0.000	0.440	-
		Subtotal	37.811	10.456		26.081		49.374		-		49.374	-	-	-

Remarks

Programs are all either abbreviated acquisition programs or non-designated projects and do not require Independent Operational Test Evaluation (IOTE). Testing is performed in accordance with approved test plans by the business owners.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NSIPS Bi-Service License	C/CPFF	Oracle : Redwood City, CA	7.200	2.423	Dec 2015	3.583	Dec 2016	3.583	Dec 2017	-		3.583	Continuing	Continuing	Continuing
		Subtotal	7.200	2.423		3.583		3.583		-		3.583	-	-	-

Remarks

NSIPS pays the Navy's share of the Bi-Service PeopleSoft license.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	45.011	12.879		29.664		52.957		-		52.957	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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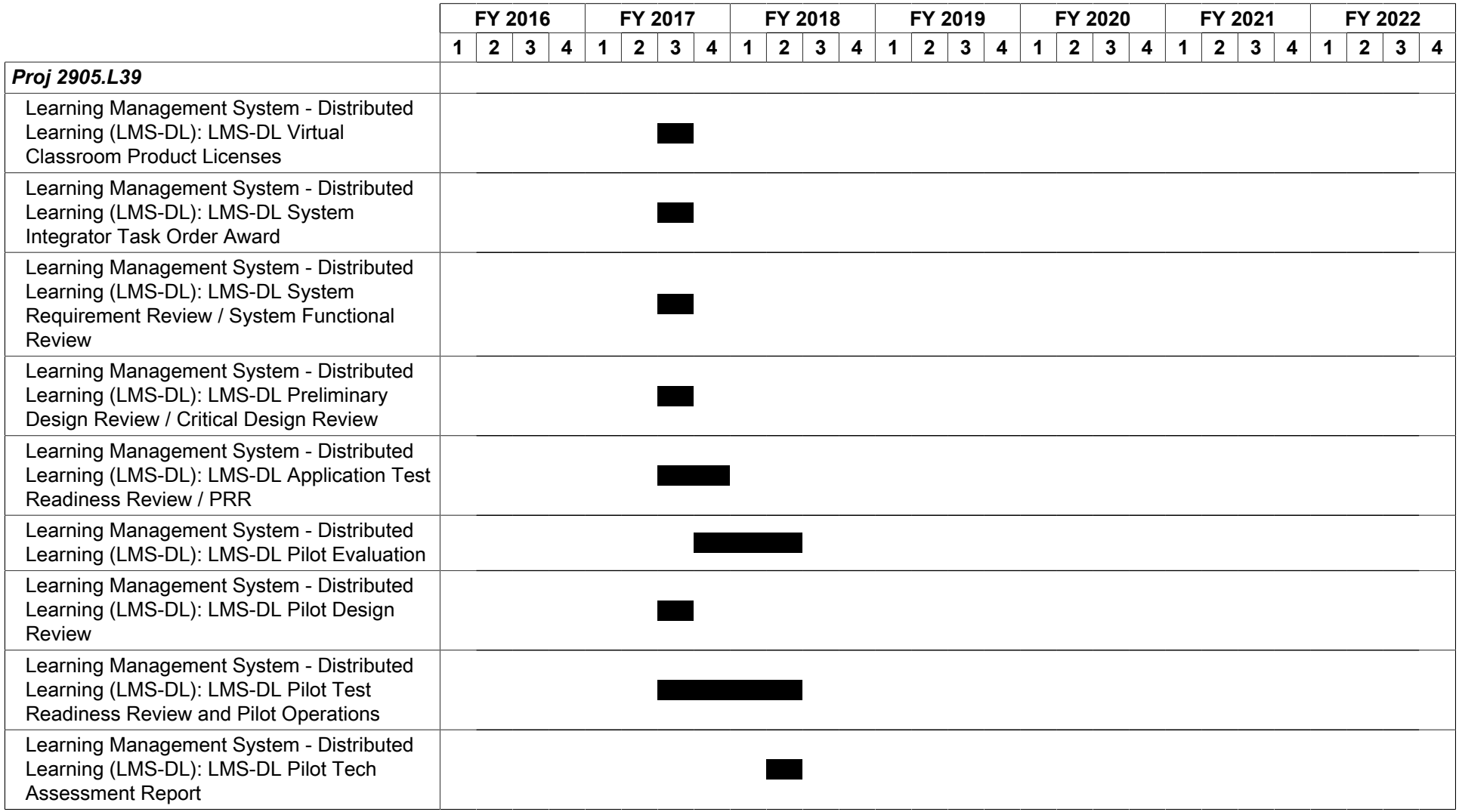
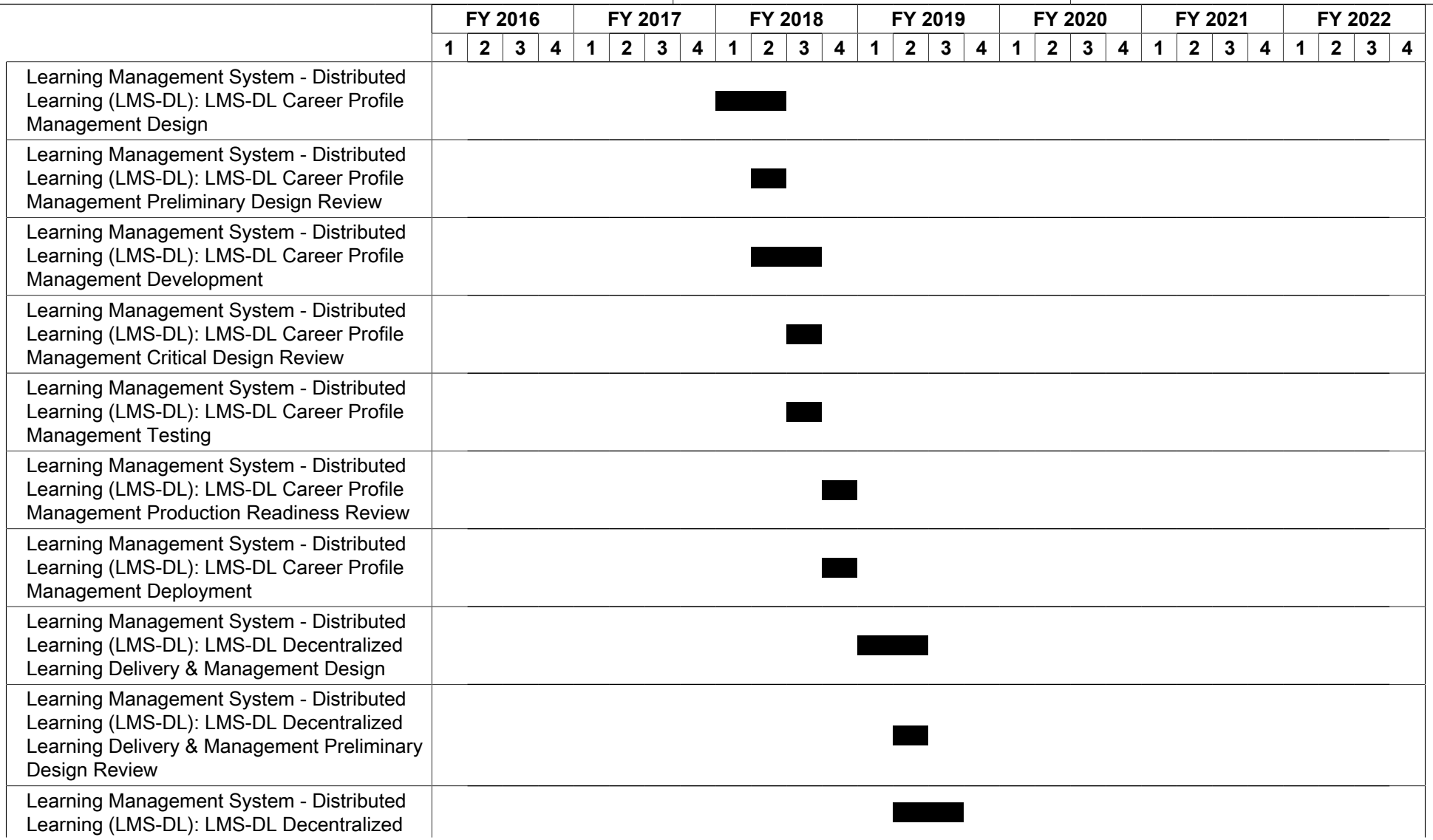


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2905. / *BUPERS IT*



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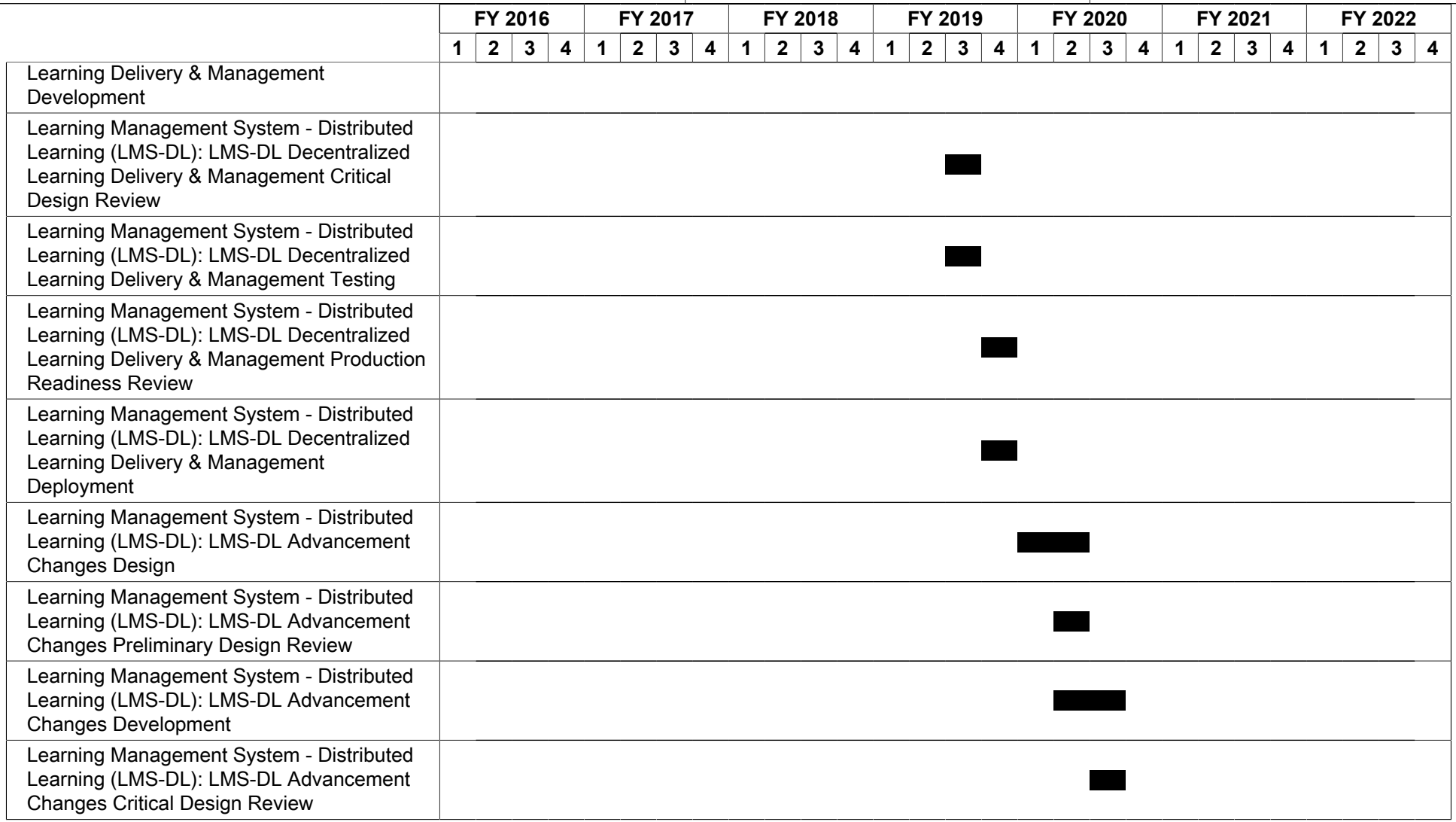

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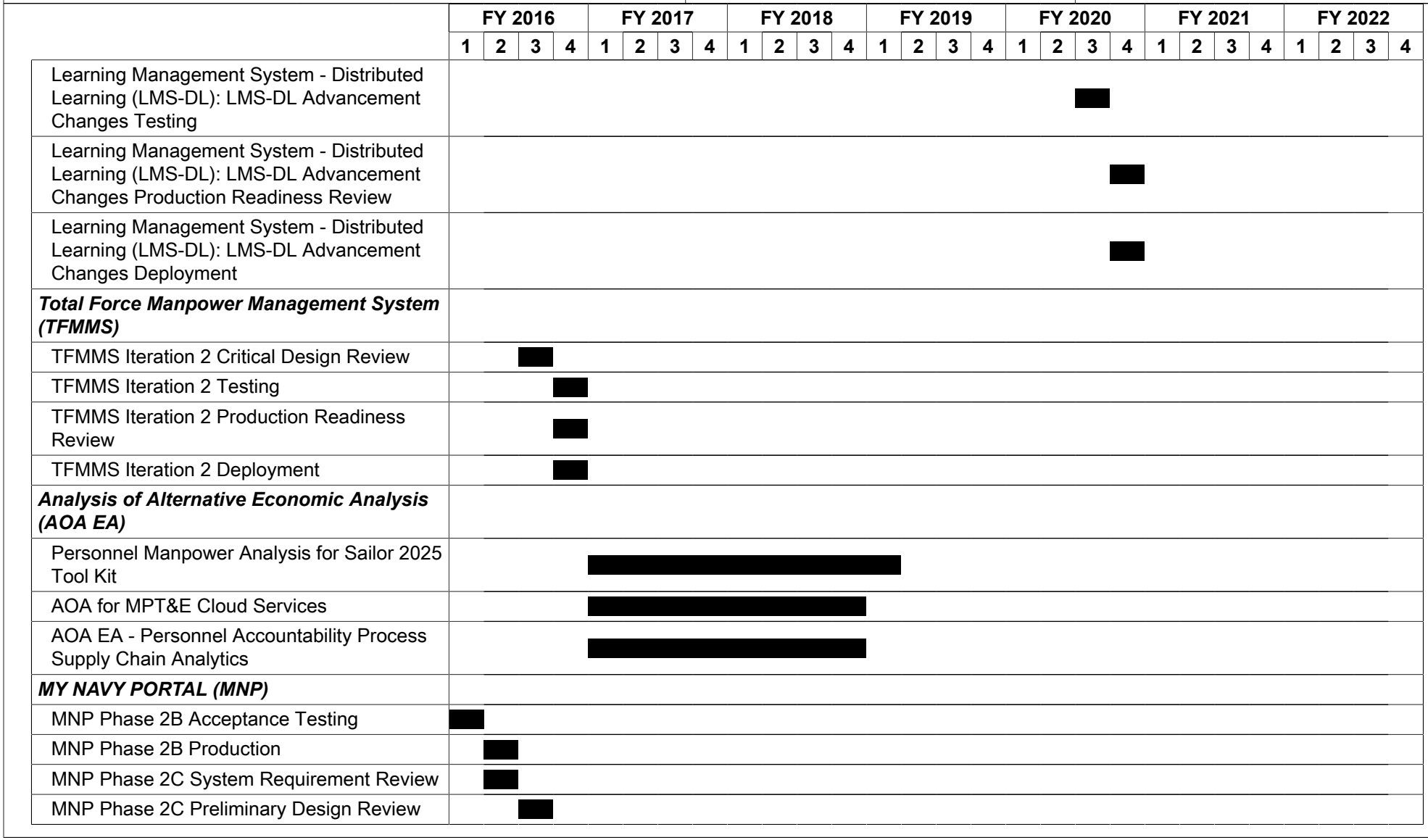

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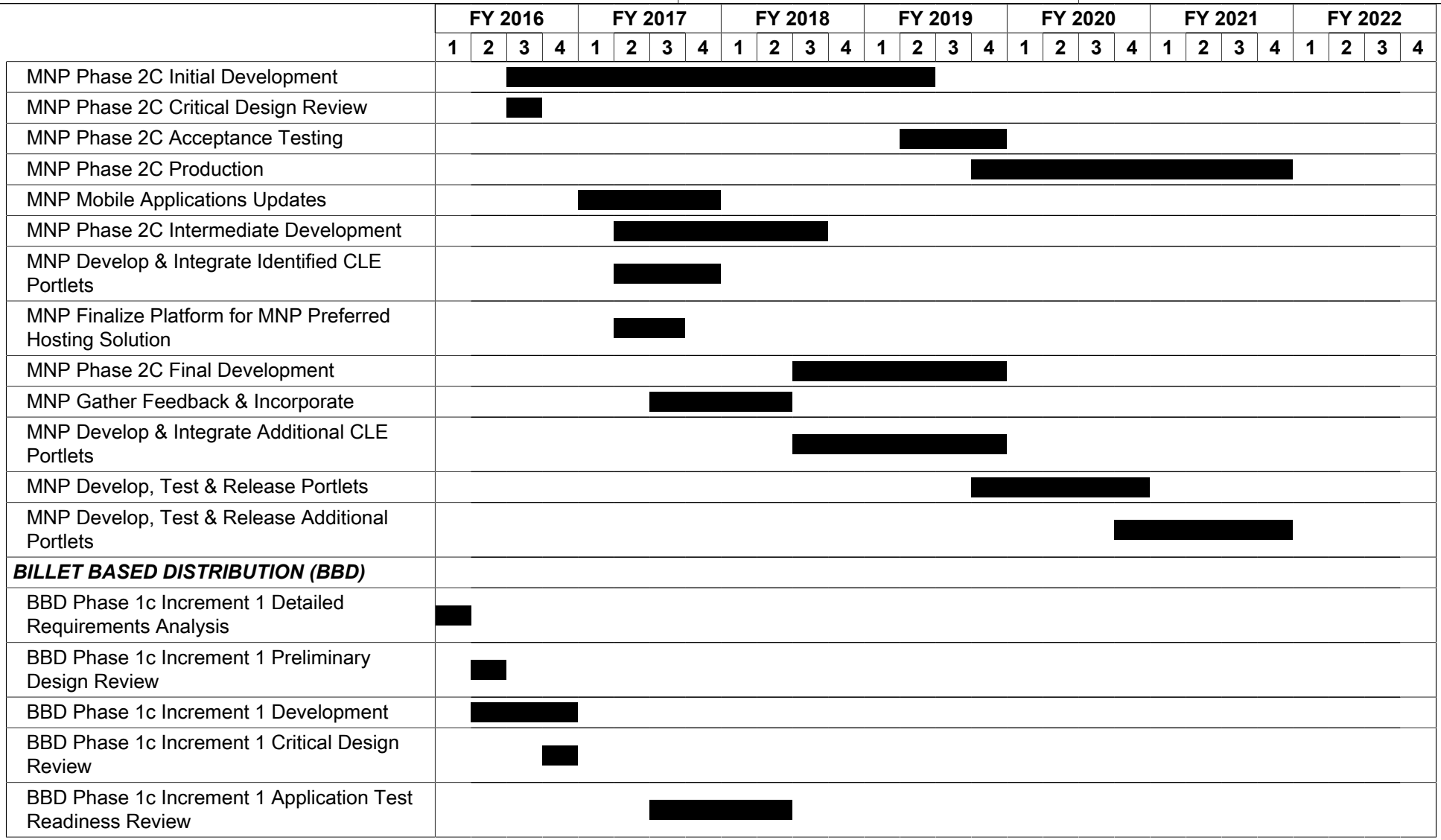

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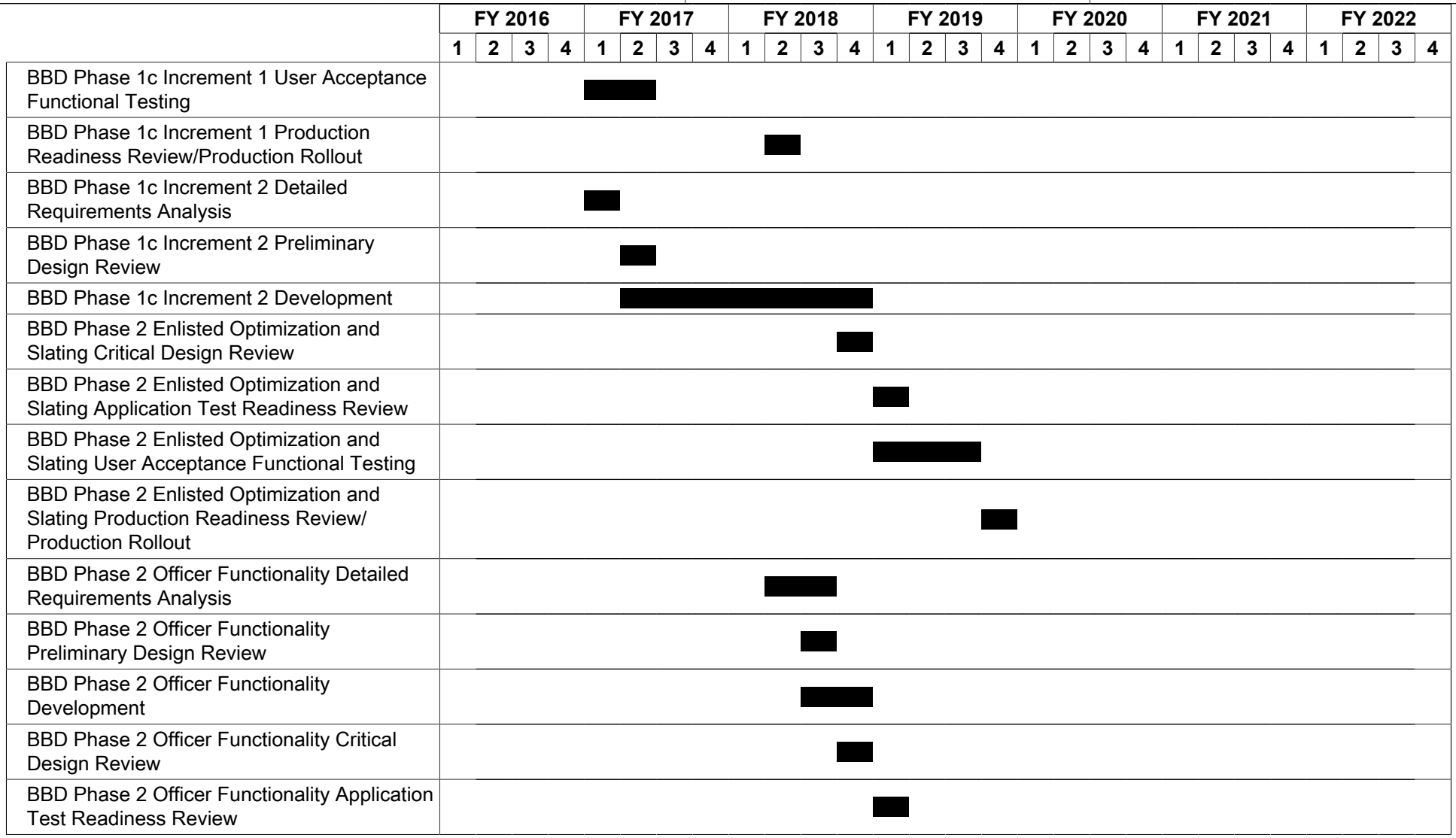

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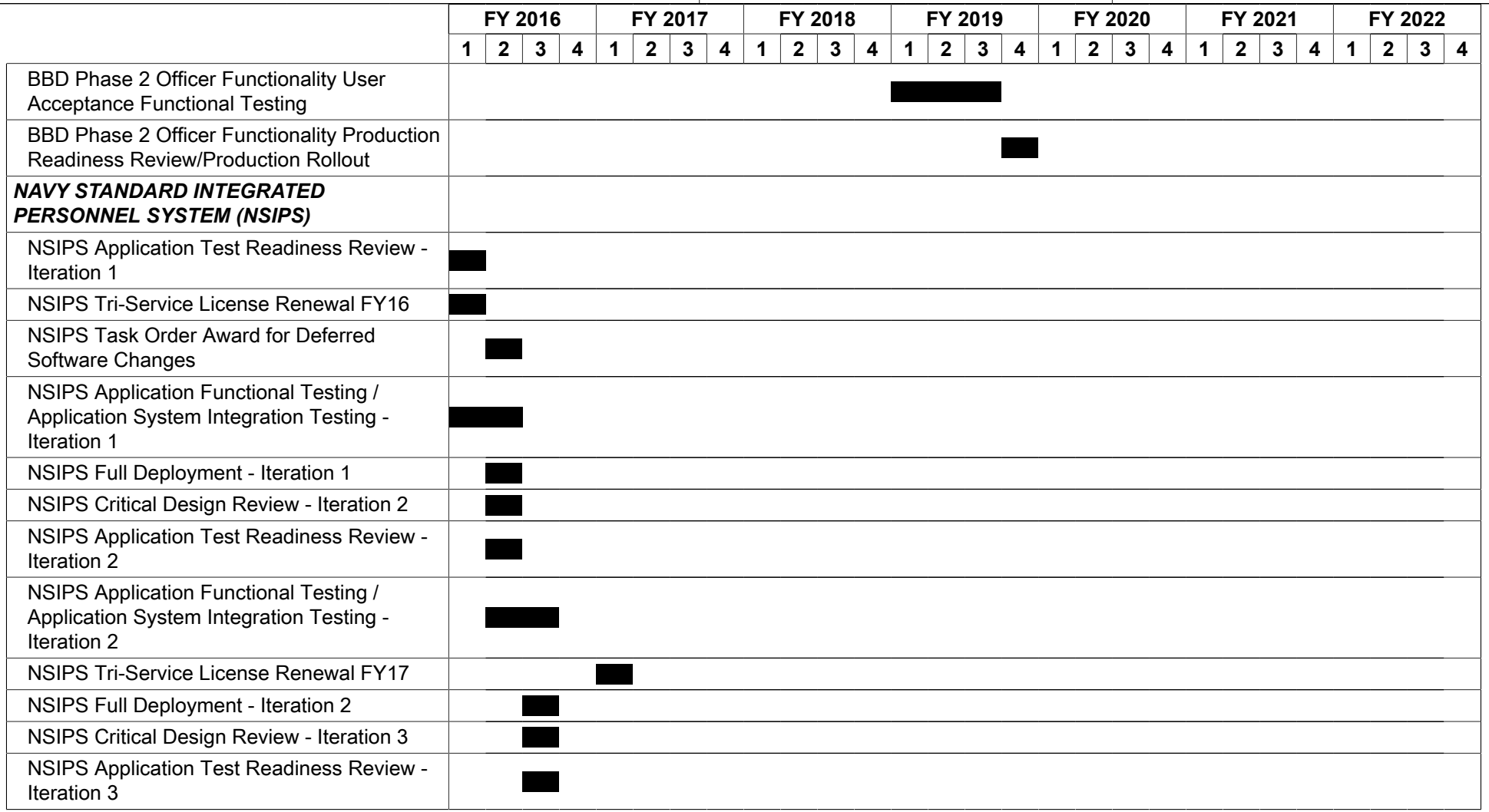

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2905. / *BUPERS IT*

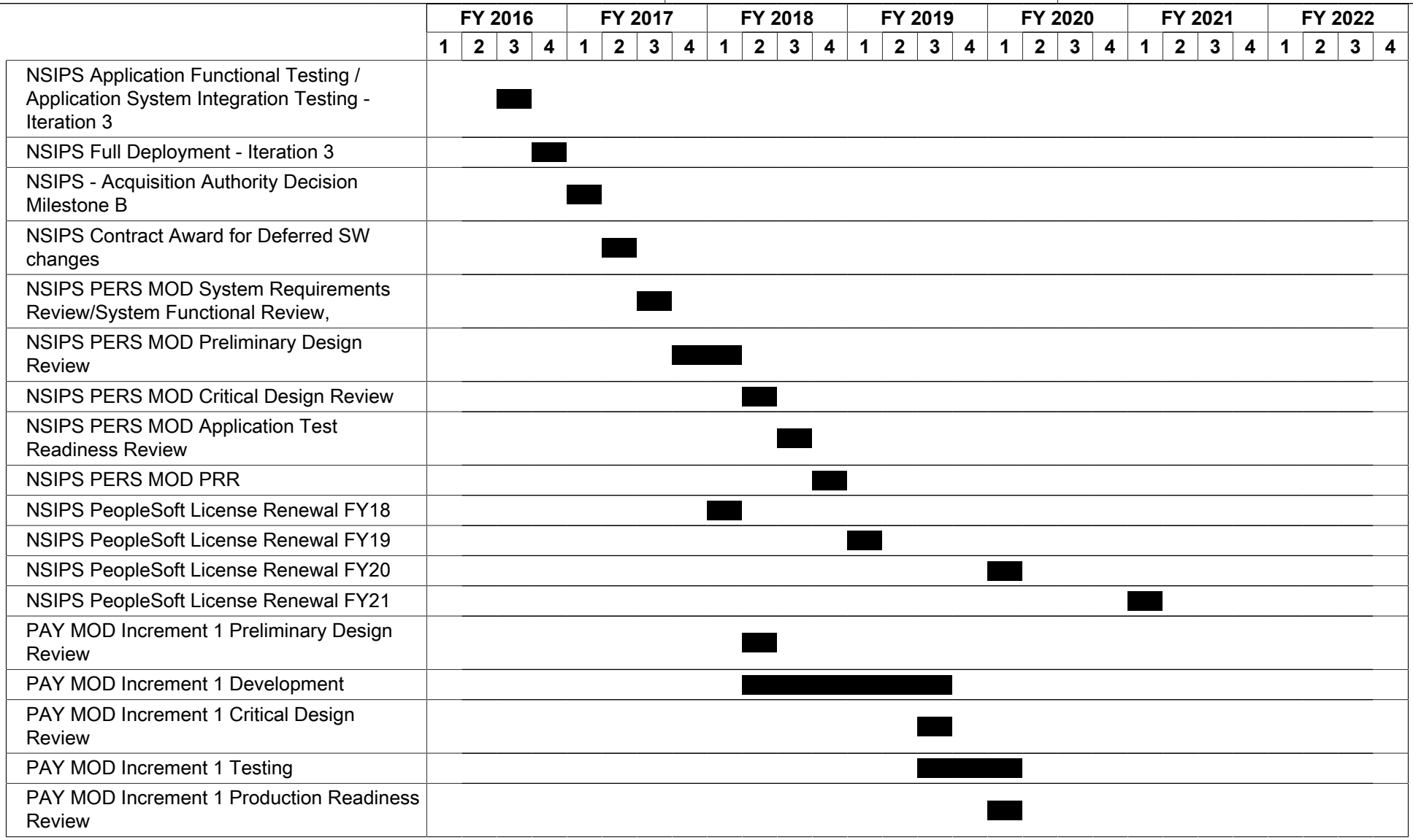

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2905. / *BUPERS IT*

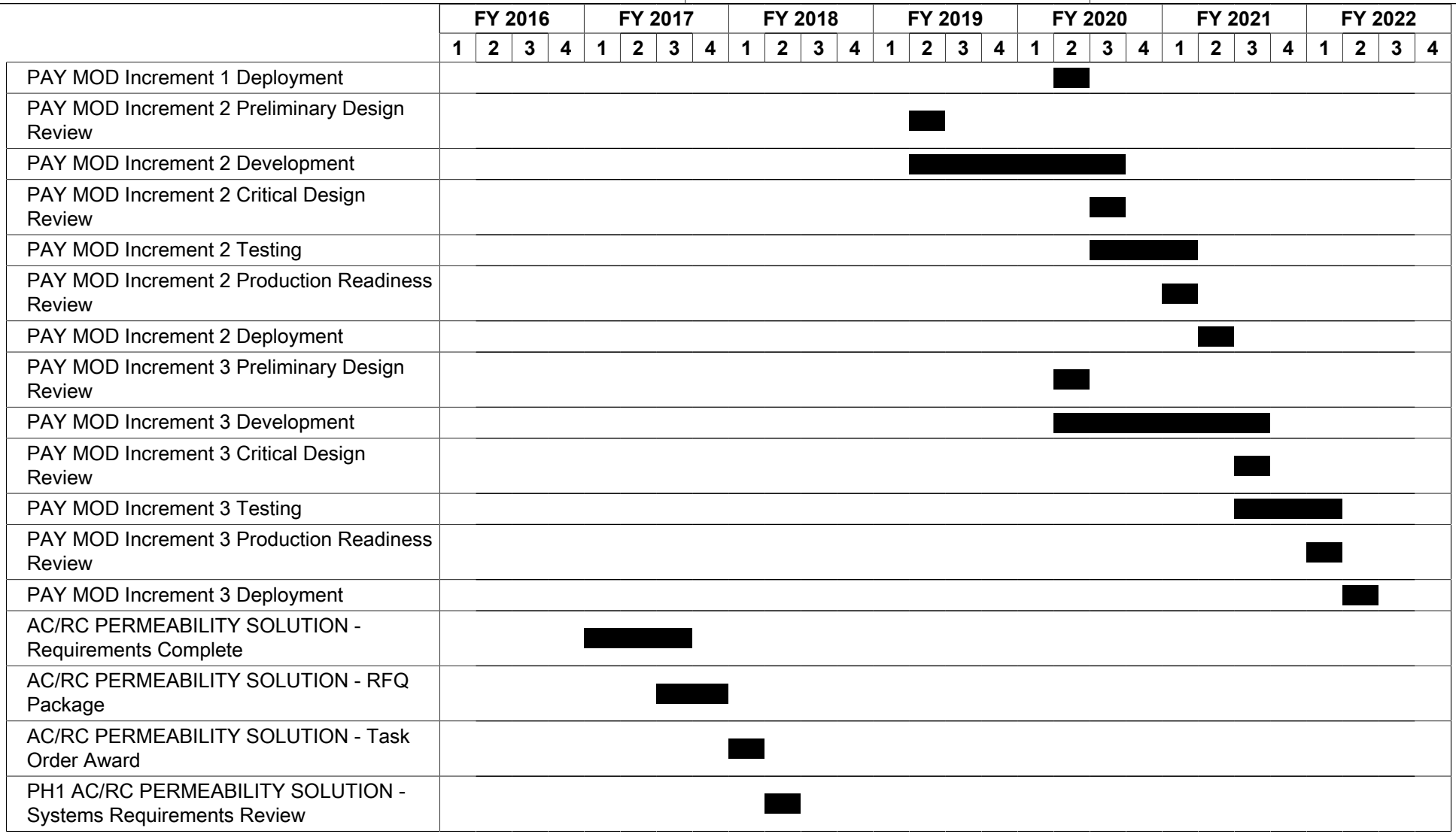

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2905. / *BUPERS IT*

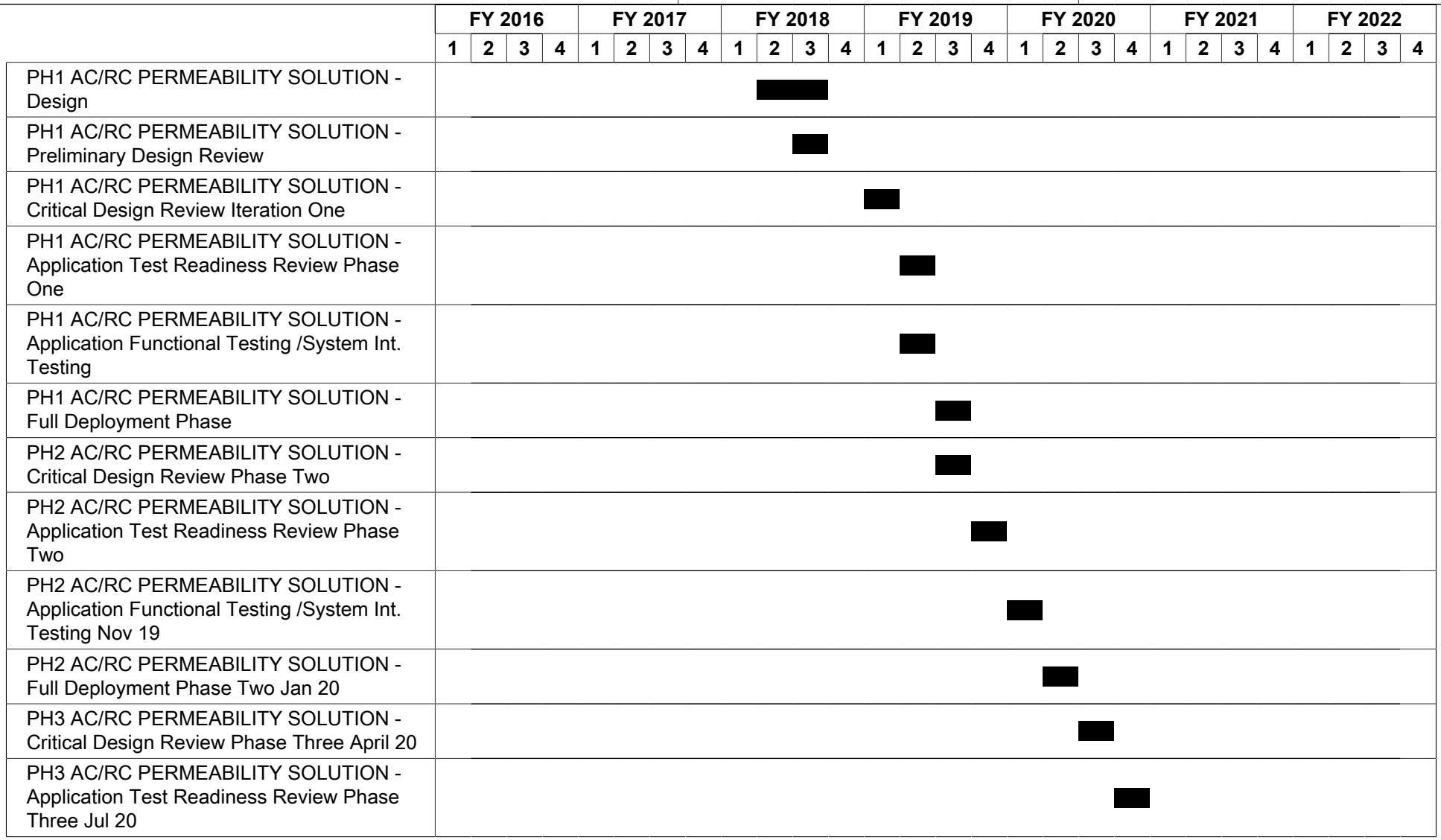

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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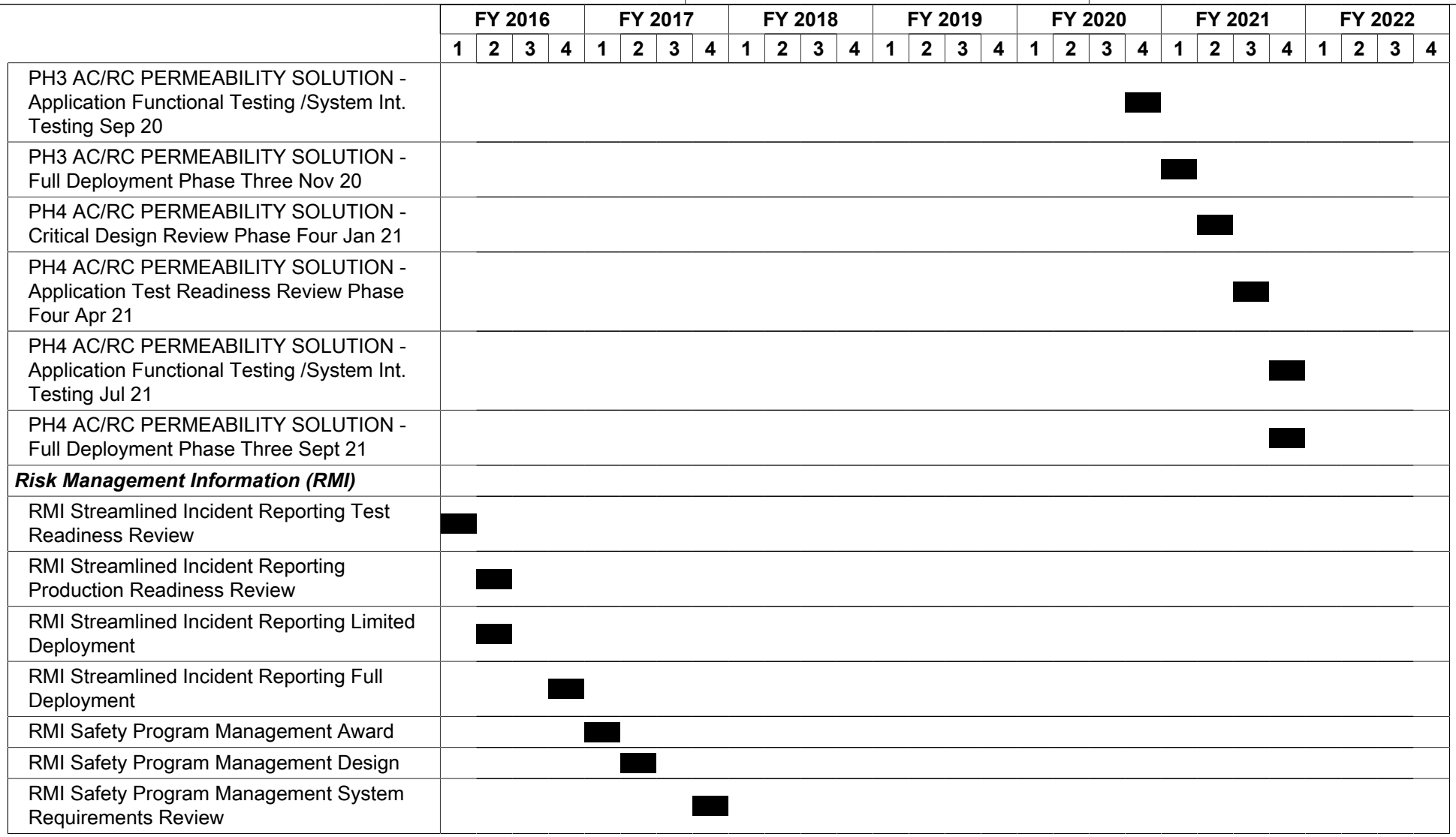

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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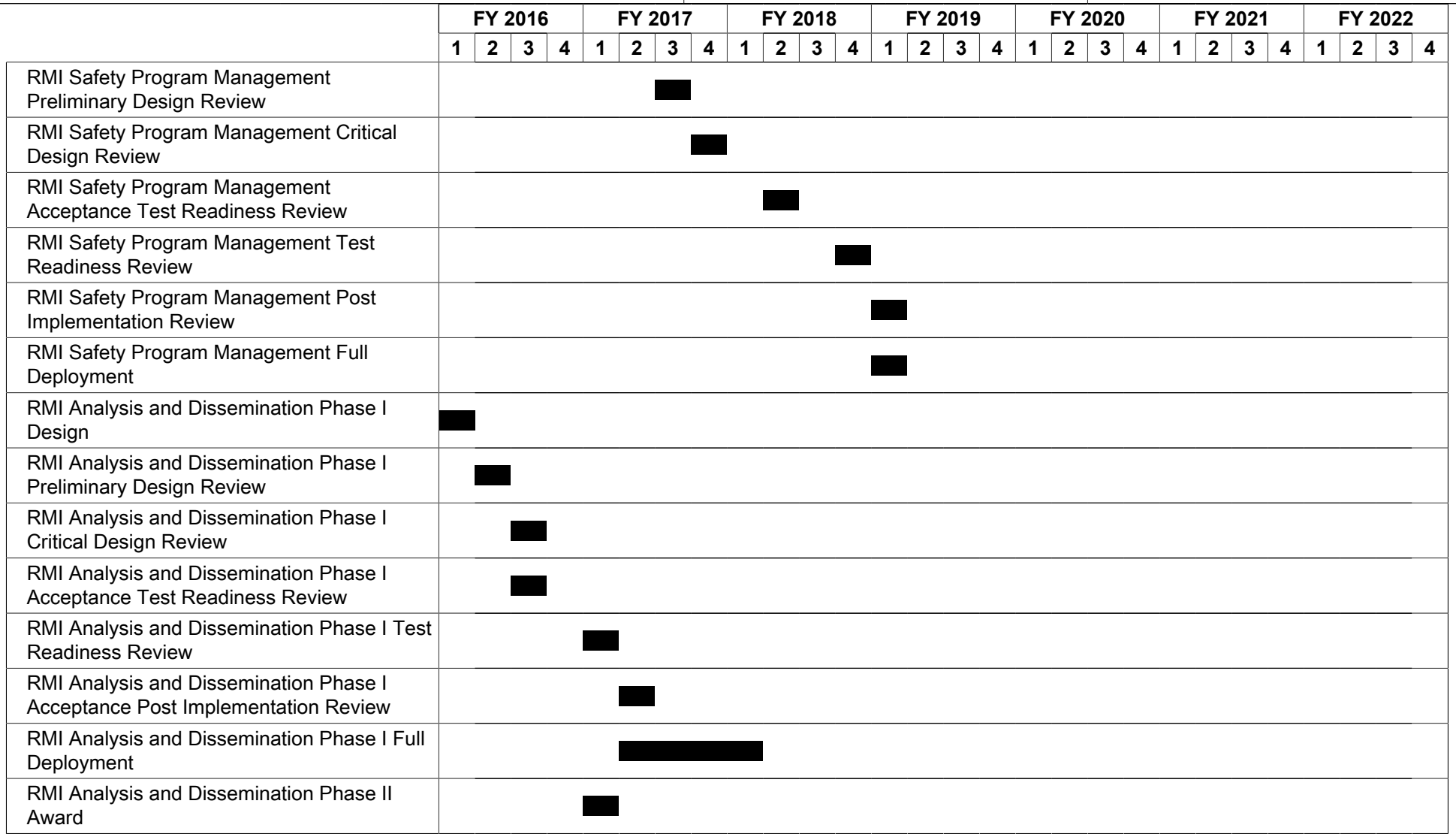

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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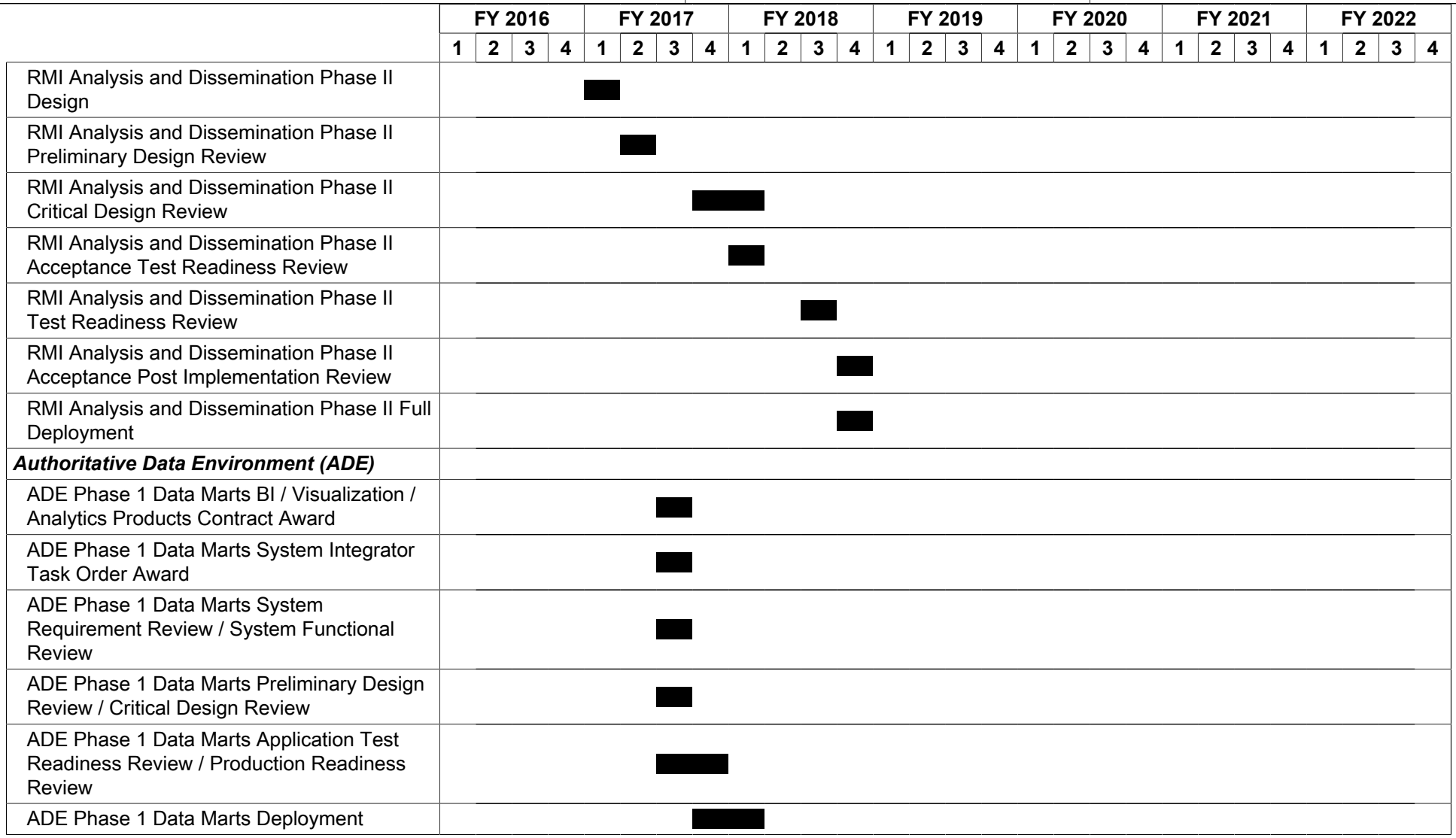

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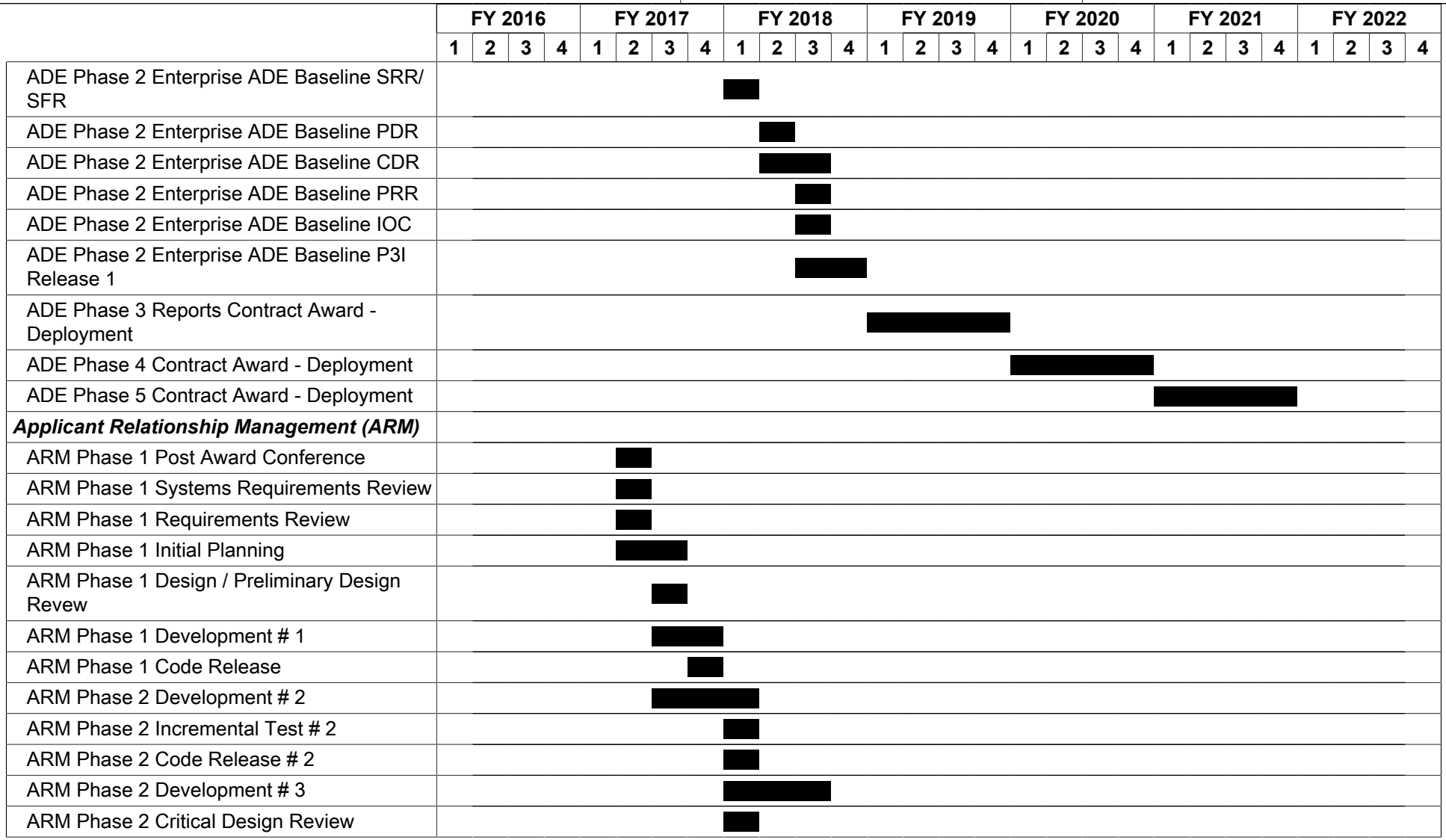

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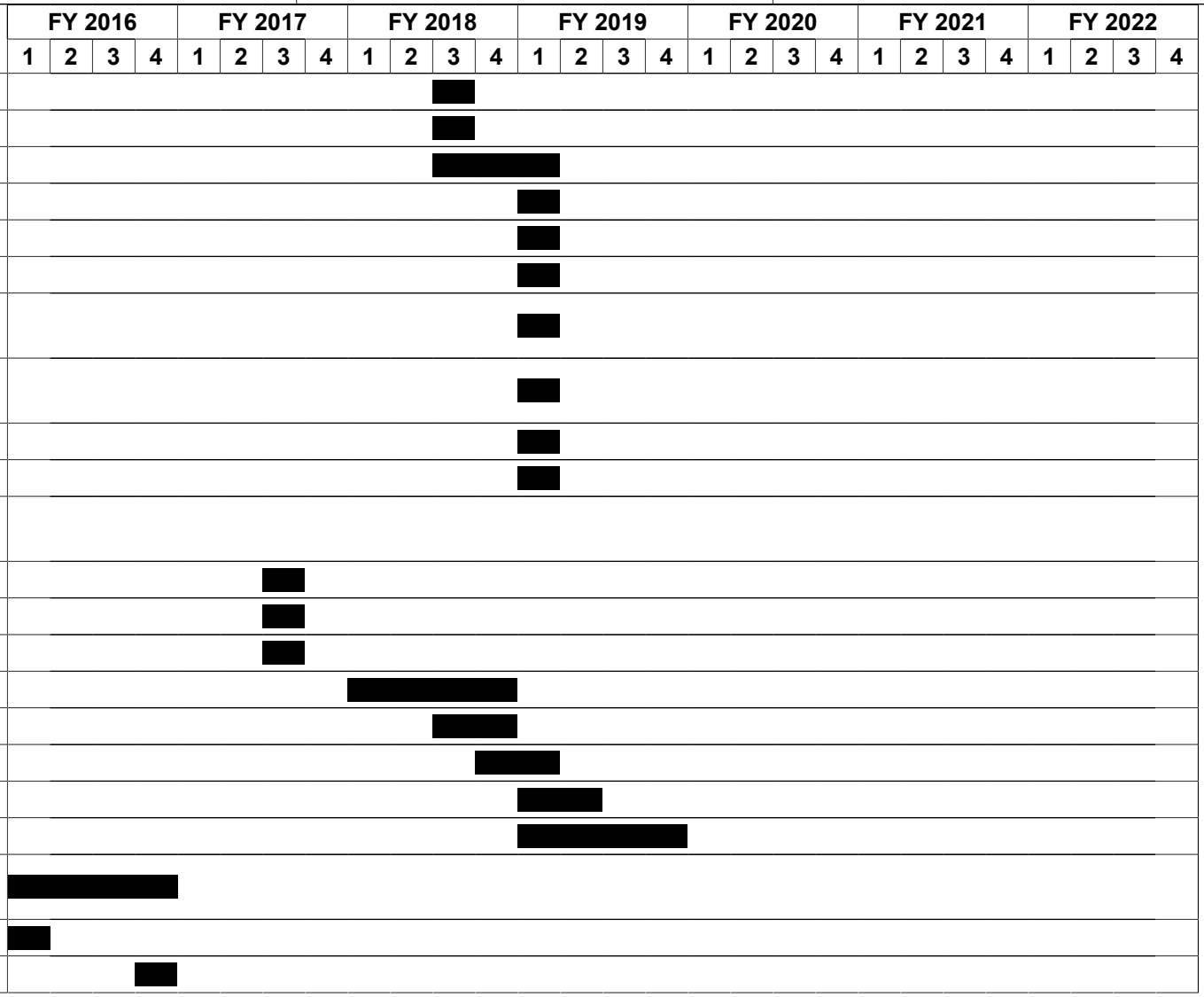

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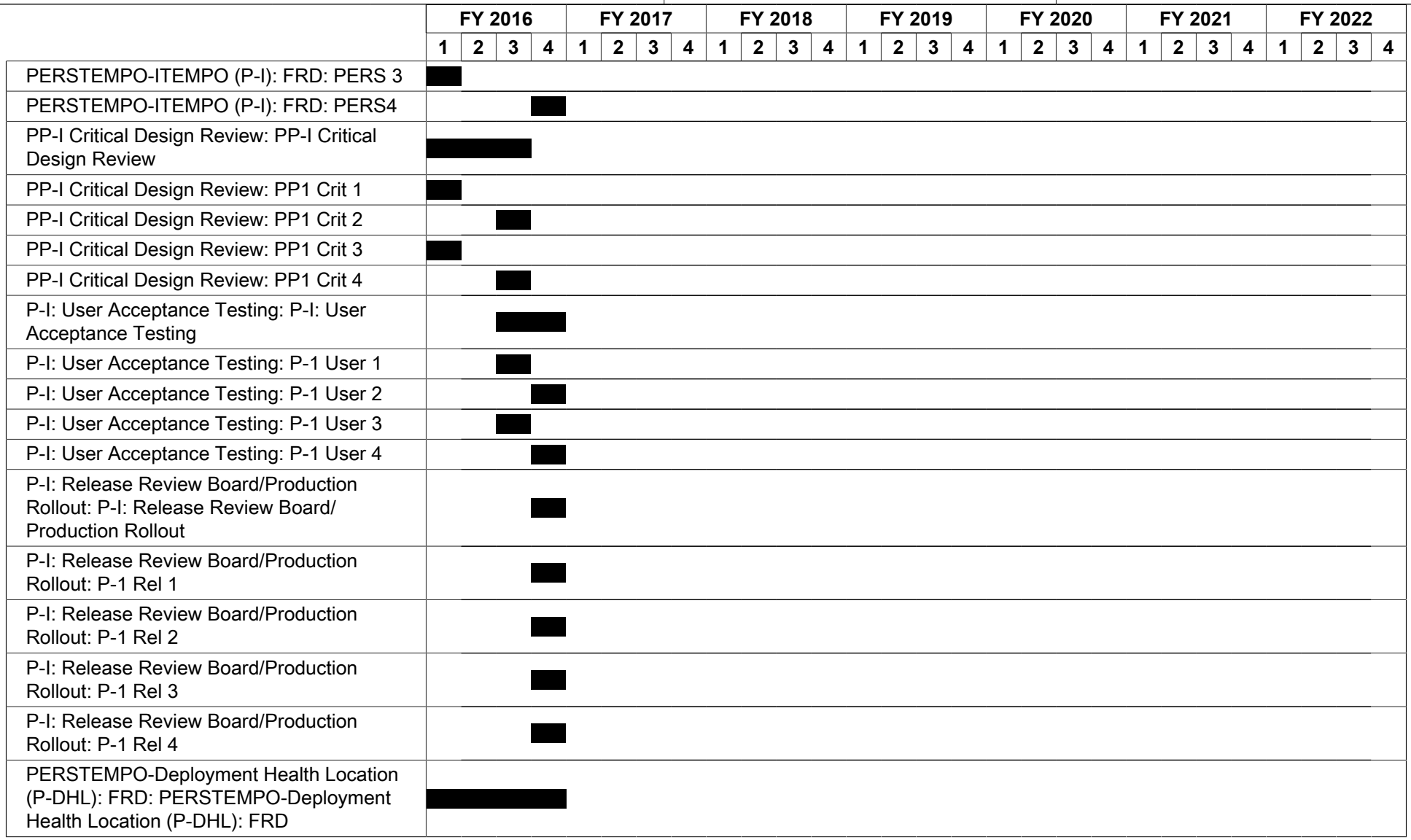

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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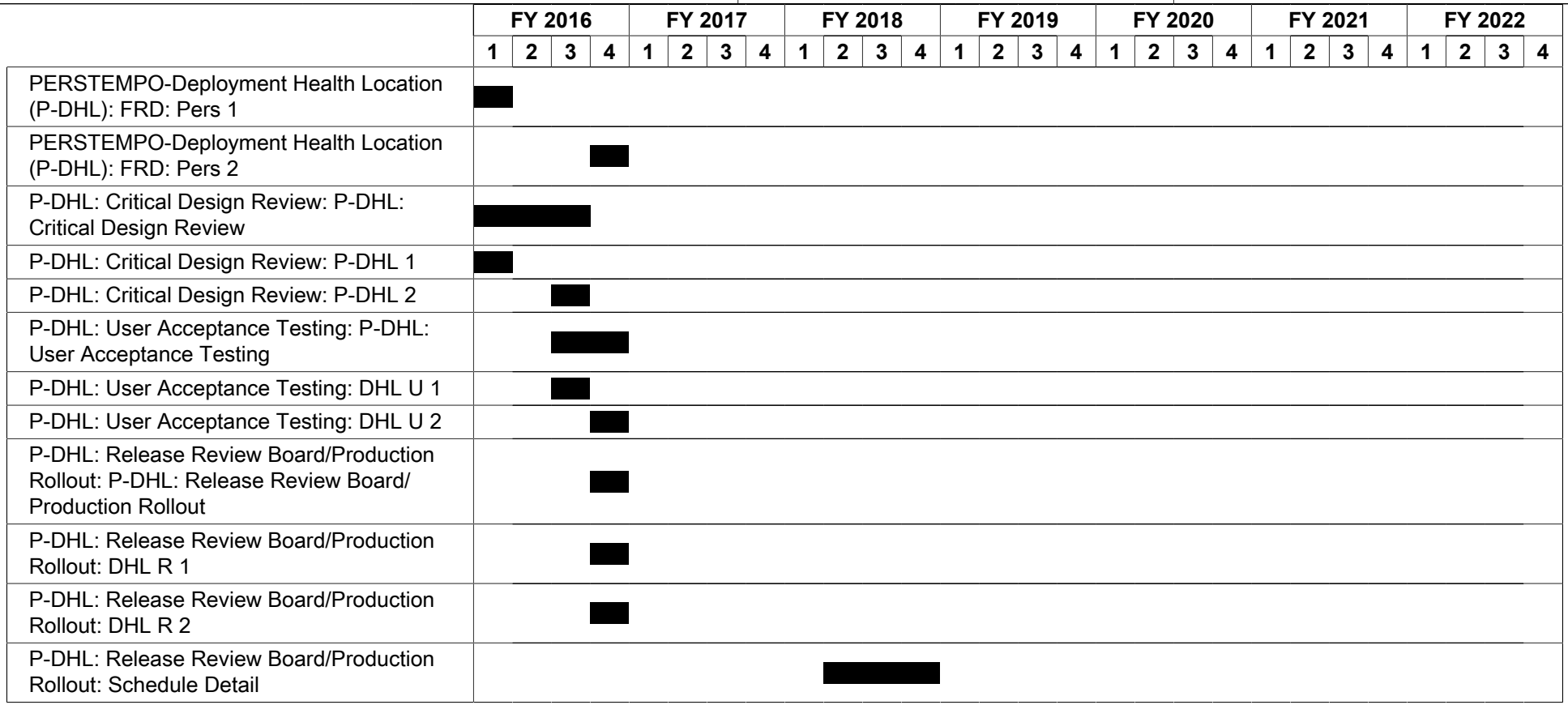

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2905. / *BUPERS IT*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2905.L39				
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Virtual Classroom Product Licenses	3	2017	3	2017
Learning Management System - Distributed Learning (LMS-DL): LMS-DL System Integrator Task Order Award	3	2017	3	2017
Learning Management System - Distributed Learning (LMS-DL): LMS-DL System Requirement Review / System Functional Review	3	2017	3	2017
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Preliminary Design Review / Critical Design Review	3	2017	3	2017
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Application Test Readiness Review / PRR	3	2017	4	2017
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Pilot Evaluation	4	2017	2	2018
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Pilot Design Review	3	2017	3	2017
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Pilot Test Readiness Review and Pilot Operations	3	2017	2	2018
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Pilot Tech Assessment Report	2	2018	2	2018
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Career Profile Management Design	1	2018	2	2018
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Career Profile Management Preliminary Design Review	2	2018	2	2018
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Career Profile Management Development	2	2018	3	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2905. / *BUPERS IT*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Career Profile Management Critical Design Review	3	2018	3	2018
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Career Profile Management Testing	3	2018	3	2018
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Career Profile Management Production Readiness Review	4	2018	4	2018
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Career Profile Management Deployment	4	2018	4	2018
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Decentralized Learning Delivery & Management Design	1	2019	2	2019
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Decentralized Learning Delivery & Management Preliminary Design Review	2	2019	2	2019
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Decentralized Learning Delivery & Management Development	2	2019	3	2019
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Decentralized Learning Delivery & Management Critical Design Review	3	2019	3	2019
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Decentralized Learning Delivery & Management Testing	3	2019	3	2019
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Decentralized Learning Delivery & Management Production Readiness Review	4	2019	4	2019
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Decentralized Learning Delivery & Management Deployment	4	2019	4	2019
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Advancement Changes Design	1	2020	2	2020
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Advancement Changes Preliminary Design Review	2	2020	2	2020
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Advancement Changes Development	2	2020	3	2020

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2905. / *BUPERS IT*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Advancement Changes Critical Design Review	3	2020	3	2020
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Advancement Changes Testing	3	2020	3	2020
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Advancement Changes Production Readiness Review	4	2020	4	2020
Learning Management System - Distributed Learning (LMS-DL): LMS-DL Advancement Changes Deployment	4	2020	4	2020
Total Force Manpower Management System (TFMMS)				
TFMMS Iteration 2 Critical Design Review	3	2016	3	2016
TFMMS Iteration 2 Testing	4	2016	4	2016
TFMMS Iteration 2 Production Readiness Review	4	2016	4	2016
TFMMS Iteration 2 Deployment	4	2016	4	2016
Analysis of Alternative Economic Analysis (AOA EA)				
Personnel Manpower Analysis for Sailor 2025 Tool Kit	1	2017	1	2019
AOA for MPT&E Cloud Services	1	2017	4	2018
AOA EA - Personnel Accountability Process Supply Chain Analytics	1	2017	4	2018
MY NAVY PORTAL (MNP)				
MNP Phase 2B Acceptance Testing	1	2016	1	2016
MNP Phase 2B Production	2	2016	2	2016
MNP Phase 2C System Requirement Review	2	2016	2	2016
MNP Phase 2C Preliminary Design Review	3	2016	3	2016
MNP Phase 2C Initial Development	3	2016	2	2019
MNP Phase 2C Critical Design Review	3	2016	3	2016
MNP Phase 2C Acceptance Testing	2	2019	4	2019
MNP Phase 2C Production	4	2019	4	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MNP Mobile Applications Updates	1	2017	4	2017
MNP Phase 2C Intermediate Development	2	2017	3	2018
MNP Develop & Integrate Identified CLE Portlets	2	2017	4	2017
MNP Finalize Platform for MNP Preferred Hosting Solution	2	2017	3	2017
MNP Phase 2C Final Development	3	2018	4	2019
MNP Gather Feedback & Incorporate	3	2017	2	2018
MNP Develop & Integrate Additional CLE Portlets	3	2018	4	2019
MNP Develop, Test & Release Portlets	4	2019	4	2020
MNP Develop, Test & Release Additional Portlets	4	2020	4	2021
BILLET BASED DISTRIBUTION (BBD)				
BBD Phase 1c Increment 1 Detailed Requirements Analysis	1	2016	1	2016
BBD Phase 1c Increment 1 Preliminary Design Review	2	2016	2	2016
BBD Phase 1c Increment 1 Development	2	2016	4	2016
BBD Phase 1c Increment 1 Critical Design Review	4	2016	4	2016
BBD Phase 1c Increment 1 Application Test Readiness Review	3	2017	2	2018
BBD Phase 1c Increment 1 User Acceptance Functional Testing	1	2017	2	2017
BBD Phase 1c Increment 1 Production Readiness Review/Production Rollout	2	2018	2	2018
BBD Phase 1c Increment 2 Detailed Requirements Analysis	1	2017	1	2017
BBD Phase 1c Increment 2 Preliminary Design Review	2	2017	2	2017
BBD Phase 1c Increment 2 Development	2	2017	4	2018
BBD Phase 2 Enlisted Optimization and Slating Critical Design Review	4	2018	4	2018
BBD Phase 2 Enlisted Optimization and Slating Application Test Readiness Review	1	2019	1	2019
BBD Phase 2 Enlisted Optimization and Slating User Acceptance Functional Testing	1	2019	3	2019
BBD Phase 2 Enlisted Optimization and Slating Production Readiness Review/ Production Rollout	4	2019	4	2019
BBD Phase 2 Officer Functionality Detailed Requirements Analysis	2	2018	3	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
BBD Phase 2 Officer Functionality Preliminary Design Review	3	2018	3	2018
BBD Phase 2 Officer Functionality Development	3	2018	4	2018
BBD Phase 2 Officer Functionality Critical Design Review	4	2018	4	2018
BBD Phase 2 Officer Functionality Application Test Readiness Review	1	2019	1	2019
BBD Phase 2 Officer Functionality User Acceptance Functional Testing	1	2019	3	2019
BBD Phase 2 Officer Functionality Production Readiness Review/Production Rollout	4	2019	4	2019
NAVY STANDARD INTEGRATED PERSONNEL SYSTEM (NSIPS)				
NSIPS Application Test Readiness Review - Iteration 1	1	2016	1	2016
NSIPS Tri-Service License Renewal FY16	1	2016	1	2016
NSIPS Task Order Award for Deferred Software Changes	2	2016	2	2016
NSIPS Application Functional Testing / Application System Integration Testing - Iteration 1	1	2016	2	2016
NSIPS Full Deployment - Iteration 1	2	2016	2	2016
NSIPS Critical Design Review - Iteration 2	2	2016	2	2016
NSIPS Application Test Readiness Review - Iteration 2	2	2016	2	2016
NSIPS Application Functional Testing / Application System Integration Testing - Iteration 2	2	2016	3	2016
NSIPS Tri-Service License Renewal FY17	1	2017	1	2017
NSIPS Full Deployment - Iteration 2	3	2016	3	2016
NSIPS Critical Design Review - Iteration 3	3	2016	3	2016
NSIPS Application Test Readiness Review - Iteration 3	3	2016	3	2016
NSIPS Application Functional Testing / Application System Integration Testing - Iteration 3	3	2016	3	2016
NSIPS Full Deployment - Iteration 3	4	2016	4	2016
NSIPS - Acquisition Authority Decision Milestone B	1	2017	1	2017
NSIPS Contract Award for Deferred SW changes	2	2017	2	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NSIPS PERS MOD System Requirements Review/System Functional Review,	3	2017	3	2017
NSIPS PERS MOD Preliminary Design Review	4	2017	1	2018
NSIPS PERS MOD Critical Design Review	2	2018	2	2018
NSIPS PERS MOD Application Test Readiness Review	3	2018	3	2018
NSIPS PERS MOD PRR	4	2018	4	2018
NSIPS PeopleSoft License Renewal FY18	1	2018	1	2018
NSIPS PeopleSoft License Renewal FY19	1	2019	1	2019
NSIPS PeopleSoft License Renewal FY20	1	2020	1	2020
NSIPS PeopleSoft License Renewal FY21	1	2021	1	2021
PAY MOD Increment 1 Preliminary Design Review	2	2018	2	2018
PAY MOD Increment 1 Development	2	2018	3	2019
PAY MOD Increment 1 Critical Design Review	3	2019	3	2019
PAY MOD Increment 1 Testing	3	2019	1	2020
PAY MOD Increment 1 Production Readiness Review	1	2020	1	2020
PAY MOD Increment 1 Deployment	2	2020	2	2020
PAY MOD Increment 2 Preliminary Design Review	2	2019	2	2019
PAY MOD Increment 2 Development	2	2019	3	2020
PAY MOD Increment 2 Critical Design Review	3	2020	3	2020
PAY MOD Increment 2 Testing	3	2020	1	2021
PAY MOD Increment 2 Production Readiness Review	1	2021	1	2021
PAY MOD Increment 2 Deployment	2	2021	2	2021
PAY MOD Increment 3 Preliminary Design Review	2	2020	2	2020
PAY MOD Increment 3 Development	2	2020	3	2021
PAY MOD Increment 3 Critical Design Review	3	2021	3	2021
PAY MOD Increment 3 Testing	3	2021	1	2022

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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
PAY MOD Increment 3 Production Readiness Review	1	2022	1	2022
PAY MOD Increment 3 Deployment	2	2022	2	2022
AC/RC PERMEABILITY SOLUTION - Requirements Complete	1	2017	3	2017
AC/RC PERMEABILITY SOLUTION - RFQ Package	3	2017	4	2017
AC/RC PERMEABILITY SOLUTION - Task Order Award	1	2018	1	2018
PH1 AC/RC PERMEABILITY SOLUTION - Systems Requirements Review	2	2018	2	2018
PH1 AC/RC PERMEABILITY SOLUTION - Design	2	2018	3	2018
PH1 AC/RC PERMEABILITY SOLUTION - Preliminary Design Review	3	2018	3	2018
PH1 AC/RC PERMEABILITY SOLUTION - Critical Design Review Iteration One	1	2019	1	2019
PH1 AC/RC PERMEABILITY SOLUTION - Application Test Readiness Review Phase One	2	2019	2	2019
PH1 AC/RC PERMEABILITY SOLUTION - Application Functional Testing /System Int. Testing	2	2019	2	2019
PH1 AC/RC PERMEABILITY SOLUTION - Full Deployment Phase	3	2019	3	2019
PH2 AC/RC PERMEABILITY SOLUTION - Critical Design Review Phase Two	3	2019	3	2019
PH2 AC/RC PERMEABILITY SOLUTION - Application Test Readiness Review Phase Two	4	2019	4	2019
PH2 AC/RC PERMEABILITY SOLUTION - Application Functional Testing /System Int. Testing Nov 19	1	2020	1	2020
PH2 AC/RC PERMEABILITY SOLUTION - Full Deployment Phase Two Jan 20	2	2020	2	2020
PH3 AC/RC PERMEABILITY SOLUTION - Critical Design Review Phase Three April 20	3	2020	3	2020
PH3 AC/RC PERMEABILITY SOLUTION - Application Test Readiness Review Phase Three Jul 20	4	2020	4	2020
PH3 AC/RC PERMEABILITY SOLUTION - Application Functional Testing /System Int. Testing Sep 20	4	2020	4	2020
PH3 AC/RC PERMEABILITY SOLUTION - Full Deployment Phase Three Nov 20	1	2021	1	2021

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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
PH4 AC/RC PERMEABILITY SOLUTION - Critical Design Review Phase Four Jan 21	2	2021	2	2021
PH4 AC/RC PERMEABILITY SOLUTION - Application Test Readiness Review Phase Four Apr 21	3	2021	3	2021
PH4 AC/RC PERMEABILITY SOLUTION - Application Functional Testing /System Int. Testing Jul 21	4	2021	4	2021
PH4 AC/RC PERMEABILITY SOLUTION - Full Deployment Phase Three Sept 21	4	2021	4	2021
Risk Management Information (RMI)				
RMI Streamlined Incident Reporting Test Readiness Review	1	2016	1	2016
RMI Streamlined Incident Reporting Production Readiness Review	2	2016	2	2016
RMI Streamlined Incident Reporting Limited Deployment	2	2016	2	2016
RMI Streamlined Incident Reporting Full Deployment	4	2016	4	2016
RMI Safety Program Management Award	1	2017	1	2017
RMI Safety Program Management Design	2	2017	2	2017
RMI Safety Program Management System Requirements Review	4	2017	4	2017
RMI Safety Program Management Preliminary Design Review	3	2017	3	2017
RMI Safety Program Management Critical Design Review	4	2017	4	2017
RMI Safety Program Management Acceptance Test Readiness Review	2	2018	2	2018
RMI Safety Program Management Test Readiness Review	4	2018	4	2018
RMI Safety Program Management Post Implementation Review	1	2019	1	2019
RMI Safety Program Management Full Deployment	1	2019	1	2019
RMI Analysis and Dissemination Phase I Design	1	2016	1	2016
RMI Analysis and Dissemination Phase I Preliminary Design Review	2	2016	2	2016
RMI Analysis and Dissemination Phase I Critical Design Review	3	2016	3	2016
RMI Analysis and Dissemination Phase I Acceptance Test Readiness Review	3	2016	3	2016
RMI Analysis and Dissemination Phase I Test Readiness Review	1	2017	1	2017
RMI Analysis and Dissemination Phase I Acceptance Post Implementation Review	2	2017	2	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
RMI Analysis and Dissemination Phase I Full Deployment	2	2017	1	2018
RMI Analysis and Dissemination Phase II Award	1	2017	1	2017
RMI Analysis and Dissemination Phase II Design	1	2017	1	2017
RMI Analysis and Dissemination Phase II Preliminary Design Review	2	2017	2	2017
RMI Analysis and Dissemination Phase II Critical Design Review	4	2017	1	2018
RMI Analysis and Dissemination Phase II Acceptance Test Readiness Review	1	2018	1	2018
RMI Analysis and Dissemination Phase II Test Readiness Review	3	2018	3	2018
RMI Analysis and Dissemination Phase II Acceptance Post Implementation Review	4	2018	4	2018
RMI Analysis and Dissemination Phase II Full Deployment	4	2018	4	2018
Authoritative Data Environment (ADE)				
ADE Phase 1 Data Marts BI / Visualization / Analytics Products Contract Award	3	2017	3	2017
ADE Phase 1 Data Marts System Integrator Task Order Award	3	2017	3	2017
ADE Phase 1 Data Marts System Requirement Review / System Functional Review	3	2017	3	2017
ADE Phase 1 Data Marts Preliminary Design Review / Critical Design Review	3	2017	3	2017
ADE Phase 1 Data Marts Application Test Readiness Review / Production Readiness Review	3	2017	4	2017
ADE Phase 1 Data Marts Deployment	4	2017	1	2018
ADE Phase 2 Enterprise ADE Baseline SRR/SFR	1	2018	1	2018
ADE Phase 2 Enterprise ADE Baseline PDR	2	2018	2	2018
ADE Phase 2 Enterprise ADE Baseline CDR	2	2018	3	2018
ADE Phase 2 Enterprise ADE Baseline PRR	3	2018	3	2018
ADE Phase 2 Enterprise ADE Baseline IOC	3	2018	3	2018
ADE Phase 2 Enterprise ADE Baseline P3I Release 1	3	2018	4	2018
ADE Phase 3 Reports Contract Award - Deployment	1	2019	4	2019
ADE Phase 4 Contract Award - Deployment	1	2020	4	2020
ADE Phase 5 Contract Award - Deployment	1	2021	4	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Applicant Relationship Management (ARM)				
ARM Phase 1 Post Award Conference	2	2017	2	2017
ARM Phase 1 Systems Requirements Review	2	2017	2	2017
ARM Phase 1 Requirements Review	2	2017	2	2017
ARM Phase 1 Initial Planning	2	2017	3	2017
ARM Phase 1 Design / Preliminary Design Revew	3	2017	3	2017
ARM Phase 1 Development # 1	3	2017	4	2017
ARM Phase 1 Code Release	4	2017	4	2017
ARM Phase 2 Development # 2	3	2017	1	2018
ARM Phase 2 Incremental Test # 2	1	2018	1	2018
ARM Phase 2 Code Release # 2	1	2018	1	2018
ARM Phase 2 Development # 3	1	2018	3	2018
ARM Phase 2 Critical Design Review	1	2018	1	2018
ARM Phase 2 Incremental Test # 3	3	2018	3	2018
ARM Phase 2 Code Release # 3	3	2018	3	2018
ARM Phase 2 Development # 4	3	2018	1	2019
ARM Phase 2 Test Readiness Review	1	2019	1	2019
ARM Phase 2 Incremental Test # 4	1	2019	1	2019
ARM Phase 2 Production Readiness Review	1	2019	1	2019
ARM Phase 2 Code Release (1-5) Into Production	1	2019	1	2019
ARM Phase 3 Development # 5 / Defect Resolution	1	2019	1	2019
ARM Phase 3 Incremental Test # 5	1	2019	1	2019
ARM Phase 3 Code Release # 5	1	2019	1	2019
Navy Manpower Requirements System (NMRS)				
NMRS Contract Award / Project Kick-Off	3	2017	3	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2905. / *BUPERS IT*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NMRS Requirements Analysis	3	2017	3	2017
NMRS Preliminary Design Review	3	2017	3	2017
NMRS Development	1	2018	4	2018
NMRS Critical Design Review	3	2018	4	2018
NMRS Acceptance Testing	4	2018	1	2019
NMRS Operational Testing	1	2019	2	2019
NMRS Deployment	1	2019	4	2019
PERSTEMPO-ITEMPO (P-I): FRD: PERSTEMPO-ITEMPO (P-I): FRD	1	2016	4	2016
PERSTEMPO-ITEMPO (P-I): FRD: PERS 1	1	2016	1	2016
PERSTEMPO-ITEMPO (P-I): FRD: PERS 2	4	2016	4	2016
PERSTEMPO-ITEMPO (P-I): FRD: PERS 3	1	2016	1	2016
PERSTEMPO-ITEMPO (P-I): FRD: PERS4	4	2016	4	2016
PP-I Critical Design Review: PP-I Critical Design Review	1	2016	3	2016
PP-I Critical Design Review: PP1 Crit 1	1	2016	1	2016
PP-I Critical Design Review: PP1 Crit 2	3	2016	3	2016
PP-I Critical Design Review: PP1 Crit 3	1	2016	1	2016
PP-I Critical Design Review: PP1 Crit 4	3	2016	3	2016
P-I: User Acceptance Testing: P-I: User Acceptance Testing	3	2016	4	2016
P-I: User Acceptance Testing: P-1 User 1	3	2016	3	2016
P-I: User Acceptance Testing: P-1 User 2	4	2016	4	2016
P-I: User Acceptance Testing: P-1 User 3	3	2016	3	2016
P-I: User Acceptance Testing: P-1 User 4	4	2016	4	2016
P-I: Release Review Board/Production Rollout: P-I: Release Review Board/Production Rollout	4	2016	4	2016
P-I: Release Review Board/Production Rollout: P-1 Rel 1	4	2016	4	2016
P-I: Release Review Board/Production Rollout: P-1 Rel 2	4	2016	4	2016

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 2905. / *BUPERS IT*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
P-I: Release Review Board/Production Rollout: P-1 Rel 3	4	2016	4	2016
P-I: Release Review Board/Production Rollout: P-1 Rel 4	4	2016	4	2016
PERSTEMPO-Deployment Health Location (P-DHL): FRD: PERSTEMPO-Deployment Health Location (P-DHL): FRD	1	2016	4	2016
PERSTEMPO-Deployment Health Location (P-DHL): FRD: Pers 1	1	2016	1	2016
PERSTEMPO-Deployment Health Location (P-DHL): FRD: Pers 2	4	2016	4	2016
P-DHL: Critical Design Review: P-DHL: Critical Design Review	1	2016	3	2016
P-DHL: Critical Design Review: P-DHL 1	1	2016	1	2016
P-DHL: Critical Design Review: P-DHL 2	3	2016	3	2016
P-DHL: User Acceptance Testing: P-DHL: User Acceptance Testing	3	2016	4	2016
P-DHL: User Acceptance Testing: DHL U 1	3	2016	3	2016
P-DHL: User Acceptance Testing: DHL U 2	4	2016	4	2016
P-DHL: Release Review Board/Production Rollout: P-DHL: Release Review Board/ Production Rollout	4	2016	4	2016
P-DHL: Release Review Board/Production Rollout: DHL R 1	4	2016	4	2016
P-DHL: Release Review Board/Production Rollout: DHL R 2	4	2016	4	2016
P-DHL: Release Review Board/Production Rollout: Schedule Detail	2	2018	4	2018

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605013N / *Information Technology Development*	Project (Number/Name) 3167 / *Joint Technical Data Integration (JTDI)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3167: *Joint Technical Data Integration (JTDI)*	24.122	6.093	5.514	2.533	-	2.533	4.748	4.534	4.034	4.113	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Joint Technical Data Integration (JTDI) Program - JTDI funding supports the evaluation, testing and integration to develop a JTDI Commercial Off-The-Shelf (COTS) solution for installation on Carrier and Amphibious Assault class ships and up to 104 Navy/Marine Corp aviation activities. JTDI is a digital technical data access, delivery and local Organizational & Intermediate level library management toolset and telemaintenance collaboration process enabler. It improves accuracy and timeliness of technical manual and other technical data delivery and minimizes the Fleet's library management burden. JTDI reduces maintenance work hours with a savings Return on Investment of 2.5:1. It facilitates the transition of the Joint Distance Support and Response Advanced Concept Technology Demonstration for telemaintenance and provides for process efficiencies to support ongoing Aviation Fleet Technical Representative reductions.

Marine Aviation Logistics Enterprise Information Technology (MAL-EIT) - MAL-EIT funding supports the evaluation, development, testing and integration of software and hardware solutions across all US Marine Corps Aviation activities to be used in the planning and execution of geographically distributed, expeditionary Aviation Logistics (AVLOG) chains in support of deployed USMC Air Combat Element operations. The MAL-EIT Program is one of four programs contained within the Marine Aviation Logistics Support Program (MALSP) modernization program known as MALSP II. Legacy MALSP is nearly 25 years old and grossly inadequate in IT capability to meet the informational, planning, and C2 needs of a dynamic, geographically distributed nodal AVLOG system. MAL-EIT is a Defense Business System Abbreviated Acquisition Program that will develop and deliver the required IT capability necessary to eliminate the IT related gaps existing in the legacy MALSP. MAL-EIT is a family of IT solutions to be developed and delivered in three increments. These increments are depicted below:

Expeditionary Pack Up Kit (EPUK): Provides Expeditionary Supply Operations to include business administration, inventory, and customer service operations.

Next Generation Buffer Management System: Provides buffer management in a time domain, and buffer sizing analysis.

Logistics Planning Tool and Optimizer Tool: Provides capability to develop tailored Remote Expeditionary Support Packages, consumption forecasts, and Nodal Logistics Lay down designs.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Joint Technical Data Integration (JTDI)	1.434	1.343	0.952	0.000	0.952
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conduct development efforts associated with a major release of fully deployed commercial off the shelf (COTS) intensive Joint Technical Data Integration (JTDI) system. Conduct COTS requirements definition, evaluation, integration, and testing of annual baseline releases. Conduct technology insertion of the JTDI system. ***FY 2017 Plans:*** Conduct development efforts associated with a major release of fully deployed COTS intensive JTDI system. Conduct COTS requirements definition, evaluation, integration, and testing of annual baseline releases. Conduct technology insertion of the JTDI system. ***FY 2018 Base Plans:*** Conduct development efforts associated with a major release of fully deployed COTS intensive JTDI system. Conduct COTS requirements definition, evaluation, integration, and testing of annual baseline releases. Conduct technology insertion of the JTDI system. ***FY 2018 OCO Plans:*** N/A					
Title: Marine Aviation Logistics Enterprise Information Technology (MAL-EIT) ***Articles:*** ***FY 2016 Accomplishments:*** Begin software development of Logistics Planning Tool/MAL-EIT 3.0 solution. Conduct test and evaluation of hardware requirements and network connectivity via satellite communication prior to deployment to the fleet based on a yearly release/maintenance cycle. ***FY 2017 Plans:*** Continue software development/prototyping and test and evaluation of Logistics Planning Tool/MAL-EIT 3.0 solution for deployment to the fleet in FY19. ***FY 2018 Base Plans:*** Complete software development and test and evaluation of Logistics Planning Tool/MAL-EIT 3.0 solution for deployment to the fleet in FY19. ***FY 2018 OCO Plans:*** N/A	4.659 -	4.171 -	1.581 -	0.000 -	1.581 -
Accomplishments/Planned Programs Subtotals	6.093	5.514	2.533	0.000	2.533

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 3167 / *Joint Technical Data Integration (JTDI)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/4268/JTDI: *Joint Technical Data Integration (JTDI) Other Aviation Support Equipment*	0.859	0.784	2.134	-	2.134	2.343	2.365	2.408	2.453	Continuing	Continuing
• OPN/4268/MALSP II: *Marine Aviation Logistics Support Program (MALSP II) Aviation Support*	0.213	1.934	0.200	-	0.200	0.220	0.237	0.240	0.245	Continuing	Continuing

Remarks

D. Acquisition Strategy

Joint Technical Data Integration (JTDI) Program - The management approach includes the Program Management Office residing in NAVAIR with Milestone Decision Authority delegated to the NAVAIR Command Information Officer (CIO). The evolutionary development approach will be used to execute requirements. Contracting for the prime integrator will be via competitively awarded indefinite delivery - indefinite quantity contracts.

Marine Aviation Logistics Enterprise Information Technology (MAL-EIT) Program - The management approach includes the Program Management Office residing within NAVAIR 6.0 and Milestone Decision Authority delegated to NAVAIR 6.7. The evolutionary development approach will be used to execute requirements. Contracting for the prime integrator will be via competitively awarded cost plus fixed fee contracts.

E. Performance Metrics

Joint Technical Data Integration (JTDI) and Marine Aviation Logistics Enterprise Information Technology (MAL-EIT)- Successfully achieve government testing of annual software release.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605013N / *Information Technology Development*	Project (Number/Name) 3185 / *Joint Airlift Information System (JALIS)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3185: *Joint Airlift Information System (JALIS)*	1.370	0.328	0.329	0.348	-	0.348	0.357	0.364	0.371	0.378	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

JALIS is an operational scheduling and aircraft management system that facilitates real-time data analysis. JALIS is a critical element in the management of DoD air logistics assets. JALIS allows:

(1) DoD Service Personnel to submit airlift requirements for DoD Personnel and cargo
(2) Air Logistics Flying Units to communicate their aircraft availability in a real-time graphic display
(3) Designated Scheduling Organizations to compare airlift requirements with available aircraft
(4) Designated Scheduling Organizations to create mission assignments

JALIS informs applicable users of mission details and modifications by using a combination of system displays and email updates. JALIS is geographically distributed and has a user base in excess of 4,000 members. JALIS facilitates the movement of thousands of DoD Personnel and tons of cargo annually in support of the following:

(1) Navy Unique Fleet Essential Airlift
(2) Army's Operational Support Airlift Agency (OSAA)
(3) United States Transportation Command (USTRANSCOM)
(4) United States Marine Corps (USMC)

The Joint Chiefs of Staff mandates JALIS as the official DoD Airlift scheduling system for Operational Support Airlift (OSA). JALIS meets the requirement for multi-service coordinated Air Logistics scheduling as directed by Chairman, Joint Chiefs of Staff. The Navy is designated as lead agency for sponsoring and funding the JALIS program.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Joint Air Logistic Information System (JALIS)	0.328	0.329	0.348	0.000	0.348
Articles:	-	-	-	-	-
FY 2016 Accomplishments: - Developed improved aircraft management tools					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 3185 / *Joint Airlift Information System (JALIS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Developed capability to schedule lifts on with aircraft transfers ***FY 2017 Plans:*** - Provide changes and enhancements as directed by the JALIS configuration control board - Integrate user functions between JALIS and JALIS Dashboard ***FY 2018 Base Plans:*** 1. Provide changes and enhancements as directed by the JALIS configuration control board 2. Integrate user functions between JALIS and JALIS Dashboard ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.328	0.329	0.348	0.000	0.348

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

As a general rule, IT development programs use an agile software development methodology therefore milestones, tasks and phases are often conducted in parallel vice sequentially.

Contract activities will focus on developing the following capabilities:

(1) Improved functionality for flight scheduling
(2) Improved coordination between JALIS scheduling organizations
(3) Integration of JALIS and JALIS Dashboard functions

E. Performance Metrics

Performance metrics for JALIS include:

(1) Completion of system change request requirements enabling production of articles as itemized in Section B.
(2) Increase operational efficiency
(a) Reduce time to train scheduling personnel by 15%

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 3185 / *Joint Airlift Information System (JALIS)*

(b) Reduce time to search for scheduling solutions 10%
(c) Reduce time to train new JALIS users by 20%

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605013N / *Information Technology Development*	Project (Number/Name) 9406 / *Maintenance Data Warehouse*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9406: *Maintenance Data Warehouse*	27.188	11.002	10.171	4.461	-	4.461	7.635	7.224	6.353	6.479	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Aviation Data Warehouse/NAVAIR Decision Knowledge Programming for Logistics Analysis and Technical Evaluation (DECKPLATE) - The development of the DECKPLATE program is the next generation data warehouse for aircraft maintenance, flight, and usage data. It provides a web-based interface to a single source of information currently being stored in multiple Naval Aviation Logistics Data Analysis systems. Through the use of analysis, query, and reporting tools the user has the capabilities to effectively obtain readiness data in a near real-time environment, as well as providing historical data for long range planning, trend analysis and records analysis, records reconstruction, and compliance with technical directives. DECKPLATE supports the mission of the warfighter who requires a single source of near real-time aviation data in which to base critical readiness decisions. This requires collecting data from authoritative sources into a data warehouse. Because the warfighter only needs to access one database, the time consuming task of collecting various pieces of data from various sources will be reduced and ultimately eliminated. This improves data quality because it reduces the possibility of two systems providing identical data elements, but slightly different data. Data availability is improved through continuous near real-time feeds from the data sources, giving the warfighter the most current information to base decisions. In addition, this also accomplishes a reduction in legacy systems mandated by Office of the Chief of Naval Operations. DECKPLATE manages total inventory for two major categories of assets, Aircraft and Engine/Propulsion Systems/Modules (EPSMs).DECKPLATE is comprised of the Aircraft Inventory and Readiness Reporting (DECK-AIRRS) and the Engine Transaction Reporting (DECK-ETR) subsystems which provide the complete lifecycle for aircraft and Engine/ Propulsion System/Modules (EPSMs). Both DECK-ETR and DECK-AIRRS are undergoing a FISCAM assessment (FY16) and audit (FY17) and are undergoing review for designation as the Accountable Property System of Record (APSR) for aircraft and uninstalled engines.

Condition Based Maintenance Plus (CBM+) - Funding supports the automated analysis and decision making processes, for the CBM+ Initiative which provides Naval Aviation Enterprise with common enabling capabilities which deliver timely data-driven decisional information to optimize aircraft availability and materiel readiness by incorporating health and usage leading indicators into the failure mode mitigation process, enabling the Warfighter to more efficiently meet mission requirements. The CBM+ Initiative increases readiness by streamlining maintenance processes, provide the sustainment base with timely, actionable logistics data not previously available, and enable engineers and acquisition professionals to support system improvements based on CBM+ acquired data results. CBM+ provides the enabling solutions needed to extend the life of current and new acquisition aircraft, realizing savings from reductions in field (organizational and intermediate) maintenance actions, reduced functional check flight hours, mishap mitigation, and reduced parts usage.

Integrated Logistics Support Management System (ILSMS) - This is a new start program. Funding supports the development of the ILSMS program is the next generation analytical tool set for Unit, Aircraft, Engines, Component Readiness and Cost metrics. It will be a web-based tool that will provide the user with validated and aggregated data. ILSMS provides analysts with the means to pull data on type/model/series (TMS) readiness, run detailed component analysis, manage aircraft life by bureau number, request lists of TMSs' top degraders, model the impacts of degraded components on readiness and cost, generate production scenarios, and manage the incorporation of technical directives. ILSMS institutionalizes a data analysis process that is repeatable and establishes a common understanding of readiness and

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 9406 / *Maintenance Data Warehouse*

cost degraders among its users. This is also the foundation for working with provider organizations to establish metrics, actionable mitigation plans and milestones. Integrated Logistics Support Management System (ILSMS) will give its users a one stop shop to proactively identify readiness and cost degraders quickly with a consistent methodology across all TMS thus providing a standardized tool to assist programs in reducing total ownership costs.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Aviation Data Warehouse/NAVAIR Decision Knowledge Programming for Logistics Analysis and Technical Evaluation (DECKPLATE)	2.549	2.556	1.487	0.000	1.487
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue transition of ALS functionality into DECKPLATE and continue transition of OEM and depot functionality. Additionally, an increase in funding in FY15 and FY16 for support of ILSMS which will develop a web-based business intelligence tool to allow all users to access and utilize the same data on a nearly real-time basis thus allowing queries across multiple type/model/series to identify systemic issues. Increase funding in FY15 and FY16 for ALS which is a DECKPLATE component that provides a central repository for aircraft maintenance information into DECKPLATE.					
FY 2017 Plans: Continue the transition of ALS functionality into DECKPLATE so as to establish a central repository for aircraft maintenance and component information into DECKPLATE. Perform modifications to the DECKPLATE system to include Financial Improvement Audit Readiness data elements and Key Supporting Documentation to meet audit standards for Accountable Property System of Record (APSR) systems and meet additional Risk Management Framework (RMF) system controls..					
FY 2018 Base Plans: Complete the transition of ALS functionality into DECKPLATE so as to establish a central repository for aircraft maintenance and component information into DECKPLATE. Perform modifications to the DECKPLATE system to include Financial Improvement Audit Readiness data elements and Key Supporting Documentation to meet audit standards for Accountable Property System of Record (APSR) systems and meet additional Risk Management Framework (RMF) system controls..					
FY 2018 OCO Plans: N/A					
Title: Condition Based Maintenance Plus (CBM+)	5.478	7.615	2.974	0.000	2.974
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Complete AIR 4.3.3 one time platform reassessment of all life limited components, and migrate CH-53E Regime Recognition Capability to production system of record (a component of NAVAIR's Aviation Logistics Environment). Perform required enhancements to integrated component tracking capability, and begin extending this capability to H-53, H-60, H-1 and V-22 platforms. Begin standup of CBM+ SDR in production, and continue evolving other required CBM+ enablers identified by Systems Integration Process physical architecture and design outputs. Continue execution of CBM+ Engineering Analysis Tool consolidation and reuse plan, and finalize NAVAIR Enterprise CBM+ BCA. Perform final assessment of CBM+ Proof of Concept efforts (down selection decisions), and begin standup of Enterprise common CBM+ enabled RCM implementations (beyond NAVAIR Rotorcraft community). Finalize standardized CBM+ Business Process and execute resource plan.					
FY 2017 Plans: Complete NAVAIR Structures one-time platform reassessment of all SH-60R/S life limited components, and expand Regime Recognition Capability to include H-1 platform. Begin expansion of CBM+ Standard Data Repository (based on the Hadoop Distributed File System) in production to accommodate and make accessible all BIT/Parametric/Mechanical/Diagnostics data across NAVAIR smart weapon system platforms, and continue evolving other required CBM+ enablers identified by Systems Integration Process physical architecture and design outputs. Continue enhancements to the Enterprise Common CBM+ Environment (Ozone Widget Framework) and the integration of the environment's best-of-breed analytical tools, per the CBM+ Engineering Analysis Tool consolidation and reuse plan, with the large scale Distributed File System storage and analytics infrastructure. Further enable NAVAIR's Core Data Science IPT with massively large scale advanced Statistical Analysis capabilities (COTS and GOTS), while enabling select Organizational Level Maintenance activities with the wireless infrastructure, connectivity, and integrated technologies to improve the on-weapon system maintenance process. Continue the execution of CBM+ pilots and Proof of Concept efforts for identifying affordable/supportable Business Processes, Common IT Solutions, and data/tool integration to streamline the RCM process and expedite decision support using smart aircraft (HUMS) and other data sources within the Enterprise CBM+ Environment.					
FY 2018 Base Plans: Continue expansion of CBM+ Standard Data Repository (based on the Hadoop Distributed File System) in production to accommodate and make accessible all BIT/Parametric/Mechanical/Diagnostics data across NAVAIR smart weapon system platforms, and continue evolving other required CBM+ enablers identified by Systems Integration Process physical architecture and design outputs. Continue enhancements to the Enterprise Common CBM+ Environment (Ozone Widget Framework) and the integration of the environment's best-of-breed analytical tools, per the CBM+ Engineering Analysis Tool consolidation and reuse plan, with the					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 9406 / *Maintenance Data Warehouse*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
large scale Distributed File System storage and analytics infrastructure. Further enable NAVAIR's Core Data Science IPT with massively large scale advanced Statistical Analysis capabilities (COTS and GOTS), while enabling select Organizational Level Maintenance activities with the wireless infrastructure, connectivity, and integrated technologies to improve the on-weapon system maintenance process. Continue the execution of CBM+ pilots and Proof of Concept efforts for identifying affordable/supportable Business Processes, Common IT Solutions, and data/tool integration to streamline the RCM process and expedite decision support using smart aircraft (HUMS) and other data sources within the Enterprise CBM+ Environment. ***FY 2018 OCO Plans:*** N/A					
Title: Integrated Logistics Support Management System (ILSMS) ***Articles:*** ***FY 2016 Accomplishments:*** Release ILSMS Version 3 Enterprise Analytical Module through web enabled Business Intelligence Solution ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	2.975 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	11.002	10.171	4.461	0.000	4.461

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/4268/DECKPLATE: *Other Aviation Support Equipment*	3.325	1.794	1.870	-	1.870	2.051	2.084	2.118	2.156	Continuing	Continuing
• OPN/4268/CBM: *Other Aviation Support Equipment*	0.222	0.198	0.199	-	0.199	0.217	0.286	0.291	0.298	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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D. Acquisition Strategy

Aviation Data Warehouse/NAVAIR Decision Knowledge Programming for Logistics Analysis and Technical Evaluation (DECKPLATE) - Development services will be awarded using a competitively awarded contract under the Seaport Contract System containing a matrix of tasks and required levels of performance. Follow on Contract will utilize the same competitive system. The Services provided under the contract support acquisition will not encompass tasks inherently Governmental in nature. The Statement of Work will include a matrix that establishes the minimum acceptable performance standards.

Condition Based Maintenance Plus (CBM+) - Development services will be provided using a competitively awarded contracts coordinated via NAVAIR's Aviation Logistics Environment (ALE) Program Management and supporting Contract Business Office, and will contain a matrix of tasks and required levels of performance. Follow on Contracts will utilize the same competitive system. The Services provided under the contract support acquisition will not encompass tasks inherently Governmental in nature, and Statements of Work will include a matrix that establishes the minimum acceptable performance standards.

Integrated Logistics Support Management System (ILSMS) - Development services will be awarded using a competitively awarded contract containing a matrix of tasks and required levels of performance. Follow on Contracts will utilize the same competitive system. The Services provided under the contract support acquisition will not encompass tasks inherently Governmental in nature. The Statement of Work will include a matrix that establishes the minimum acceptable performance standards.

E. Performance Metrics

The following performance metrics apply to Aviation Data Warehouse/NAVAIR Decision Knowledge Programming for Logistics Analysis and Technical Evaluation (DECKPLATE), Condition Based Maintenance (CBM+) and Integrated Logistics Support Management System (ILSMS):

1. Metric - During the life of the contract verify conformance with agency specific information processing standards and functional requirements. Prior to delivery of enhanced software, demonstrate the operational capability of the system software. Standard - Functionality of the software to meet required systems architecture and processing capabilities. Max Deviation Allowed - All requirements mandated by law or regulation must be 100% compliant. Quality Assurance - Independent Verification and Validation (IV&V) for testing new releases of software to determine that previous functionality is maintained. Customer satisfaction as measured through limited validated customer complaints, feedback, and surveys.
2. Metric - Interfaces must maintain compatibility among system components in the operational environment. Standard - Service Levels for software: Throughput in terms of processing response time, number of transactions processed per second; volume of data processed over time. Compatibility with particular hardware and software within the existing processing environment. Functionality of software to meet required systems architecture and processing capabilities. Max Deviation Allowed - None. Quality Assurance - Customer satisfaction as measured through limited validated customer complaints, feedback and surveys. Operational monitoring by use of system statistics and logs. IV&V for testing new software, including verifying results to determine that requirements and specifications are met.
3. Metric - Documentation for deliverables must match the agency specific system processing and operational procedures. Standard - Documentation meets agency specific formats for accuracy and completeness. Max Deviation Allowed - None. Quality Assurance - IV&V for determining that documentation delivered by the contractor matches the system processing and operational procedures.
4. Metric - Meet delivery dates/milestones. Period of Performance will be 12 months from the date of award. Standard - Delivery dates are met, or exceeded. Max Deviation Allowed - None. Quality Assurance - 100% inspection.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 9406 / *Maintenance Data Warehouse*

5. Metric - Security. Standard - Meet all Government and agency specific requirements. Max Deviation Allowed - None. Quality Assurance - 100% inspection to ensure that all Government and Agency specific requirements have been met. Independent verification of security procedures defined by agency (could be performed by a third party, or another agency according to current security regulations and measures).
6. Metric - Enhancement to software shall not adversely affect system performance. Standard - Standards affecting system performance include but are not limited to: response time for resolving problems; central processing unit busy; response time; memory utilization; storage utilization. Max Deviation Allowed - Base line functionality is met at 100%. Non critical functionality is met at 95%. Quality Assurance - Operational monitoring by use of system statistics and logs.
7. Metric - New releases of software must maintain previously provided functionality, while providing enhanced capabilities, or systems corrections. Standard - Software adds value and improves existing functionality without negatively impacting the existing operational environment. Max Deviation Allowed - Base line functionality is met at 100%. Non critical functionality is met at 95%. Quality Assurance - Independent Verification and Validation for testing new releases of software to determine that previous functionality is improved. Customer satisfaction is measured through validated customer complaints and surveys.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605013N / *Information Technology Development*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	3.862	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.862
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Congressional Add

A. Mission Description and Budget Item Justification

Congressional Add (Project C286): The enterprise Product Lifecycle Management (ePLM) Integrated Decision Environment (IDE) will serve as a central knowledge repository for process and product evolution and history. It will promote integration, data exchange, and analysis among all business users and information systems that will interact with any Weapon System Configuration Item (CI) during its lifecycle. ePLM IDE enables product support providers and the warfighter to maintain weapon systems in the most ready condition at the lowest lifecycle cost by linking readiness and cost impacts with every decision. The ePLM IDE will effectively address each weapon system program requirement for an IDE as stated in the Defense Acquisition Guidebook.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017
Congressional Add: Information Technology Development Increase	3.862	0.000
FY 2016 Accomplishments: FY16 - ePLM: Enhancement of ePLM IDE capability which includes expanded product data management capability, enhancement of predictive analytics, and enhancement and integration of SBIR Phase 3 Technologies. Further integration of the capabilities necessary to deliver an enterprise based decision support solution and continued integration of additional software capabilities, development of human capital solutions and refinement of the acquisition processes and sustainment approaches. FY16 funds supported two PEO IWS 2.0 program implementations into the ePLM IDE tool.		
FY 2017 Plans: N/A		
Congressional Adds Subtotals	3.862	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605013N / *Information Technology Development*	**Project (Number/Name)** 9999 / *Congressional Adds*

D. Acquisition Strategy

FY17 - ePLM: NSWC-PHD will lead the integration of FY15 and FY16 SBIR-developed technologies through the utilization of two FY16 planned Phase 3 SBIR contracts (Missile Defense Agency (MDA), Q4 FY16 award, $49M ceiling). SBIR technologies will be enhanced and integrated into the ePLM tool suite and will result in execution of a competitive, full acquisition strategy.

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605024N *I (U)Anti-Tamper Technology Support*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	0.000	2.500	3.410	-	3.410	4.318	4.918	5.819	5.934	Continuing	Continuing
3414: *Anti-Tamper Technology Support*	0.000	0.000	2.500	3.410	-	3.410	4.318	4.918	5.819	5.934	Continuing	Continuing

Note

Budget was Classified at PB17 and declassified for DON18

New Start FY2017

A. Mission Description and Budget Item Justification

Develops new and novel Anti-Tamper technologies for all Department of Navy weapon and combat systems. The technologies to be developed will be new countermeasures to prevent reverse engineering of critical U.S. military systems. The technologies include secure processing, sensors, architecture components, and enabling technologies.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	2.500	3.400	-	3.400
Current President's Budget	0.000	2.500	3.410	-	3.410
Total Adjustments	0.000	0.000	0.010	-	0.010
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	0.010	-	0.010

Change Summary Explanation

Schedule: Not Applicable
Technical: Not Applicable

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605024N / *(U)Anti-Tamper Technology Support*	Project (Number/Name) 3414 / *Anti-Tamper Technology Support*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3414: *Anti-Tamper Technology Support*	0.000	0.000	2.500	3.410	-	3.410	4.318	4.918	5.819	5.934	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Exhibit held at higher classification submitted for PB17. Unclassified exhibit submitted for PB18.

A. Mission Description and Budget Item Justification

This project develops new and novel Anti-Tamper technologies for all Department of Navy weapon and combat systems. The technologies to be developed will be new countermeasures to prevent reverse engineering of critical U.S. military systems. The technologies include secure processing, sensors, architecture components, and enabling technologies. Low technology readiness level projects will be tested for maturation and implemented to protect US technologies. Government laboratory expertise will mature in Anti Tamper technologies and techniques. Integration of various techniques will enhance the strength of the protection scheme which limits the opportunities to exploit our technological advantage on the battlefield.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Anti Tamper Technology Support	0.000	2.500	3.410	0.000	3.410
Articles:	-	-	-	-	-
Description: This project develops new and novel Anti-Tamper technologies for all Department of Navy weapon and combat systems. The technologies to be developed will be new countermeasures to prevent reverse engineering of critical U.S. military systems. The technologies include secure processing, sensors, secure architecture components, and enabling technologies.					
FY 2016 Accomplishments: N/A					
FY 2017 Plans: To begin development of new and novel technologies that will become reverse engineering countermeasures for Department of the Navy (DoN) weapon and combat systems. The project will include awarding technology development contracts and securing engineering support from DoN engineering facilities.					
FY 2018 Base Plans: Continue development of new and novel technologies that will become reverse engineering countermeasures for Department of the Navy (DoN) weapon and combat systems. The project will include awarding technology					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605024N / *(U)Anti-Tamper Technology Support*	**Project (Number/Name)** 3414 / *Anti-Tamper Technology Support*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
development contracts and securing engineering support from DoN engineering facilities. Test and perform technical evaluations of low technical readiness level projects for implementation to protect US technologies. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	2.500	3.410	0.000	3.410

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This is a non-ACAT program. The strategy will be to issue technology development contracts and use Department of Navy (DoN)labs for technology development, along with using DoN engineering organizations for engineering support.

E. Performance Metrics

The project will fund between 4 and 8 technology development projects that will be focused on bringing anti-tamper technologies that transition to the DoN programs. The project will have a greater than 67% transition rate.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605212N / *CH-53K*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	4,812.294	563.174	404.810	340.758	-	340.758	330.755	300.041	195.506	10.522	0.000	6,957.860
3059: *CH-53K Development*	4,812.294	563.174	404.810	340.758	-	340.758	330.755	300.041	195.506	10.522	0.000	6,957.860
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 390												

A. Mission Description and Budget Item Justification

The CH-53 is the only marinized heavy-lift helicopter in the world and is the Marine Corps only heavy-lift helicopter. The CH-53 mission is the conduct of expeditionary heavy-lift assault transport of armored vehicles, equipment and personnel to support distributed operations deep inland from a sea-based center of operations. The CH-53E "Super Stallion" was introduced into operations in 1980 as an upgrade version of the CH-53D. The CH-53E has developed performance degradation, fatigue life, interoperability, maintenance supportability, and other operational concerns. An improved CH-53 is needed to support Marine Air-Ground Task Force heavy-lift requirements in the 21st century joint environment. The CH-53K "King Stallion" will provide improvements in range and payload, performance, cargo handling, turn-around times, reliability and maintainability, interoperability, and survivability. The CH-53K program is required to provide full system capability, including shipboard compatibilities, at Initial Operational Capability (IOC).

Total aircraft quantities for the CH-53K program are 205 helicopters. This includes one Ground Test Vehicle (GTV) and four Engineering Development Models (EDMs) for System Development and Demonstration (SDD), to be purchased with Research, Development, Test & Evaluation (RDT&E) funds. Of the remaining 200 aircraft, six will be System Demonstration Test Articles (SDTAs) and will be incrementally funded using RDT&E funds. The SDTAs will be used to prove out production and integration processes on a pilot production line, and to provide aircraft for Initial Operational Test and Evaluation. The remaining 194 aircraft will be Aircraft Procurement, Navy funded.

FY18 RDT&E funds CH-53K SDD activities which include: ground and flight test of GTV, EDMs and SDTAs, associated subsystems and components, and the continued fabrication and assembly of the remaining three SDTA aircraft.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production decision.

Note
$53.000M FY16 RDTE is encumbered in support of JUONS-S0-0010, entitled 'Federated Distributed Aperture Infrared Countermeasures' (DAIRCM) via Rapid Acquisition Authority with a planned contract award in September 2016.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy* / BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0605212N / *CH-53K*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	592.317	404.810	233.861	-	233.861
Current President's Budget	563.174	404.810	340.758	-	340.758
Total Adjustments	-29.143	0.000	106.897	-	106.897
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-10.017	0.000			
• SBIR/STTR Transfer	-19.126	0.000			
• Program Adjustments	0.000	0.000	106.600	-	106.600
• Rate/Misc Adjustments	0.000	0.000	0.297	-	0.297

Change Summary Explanation

Technical: FY 2018 funding level increases by $106.600M in order to fully-fund to the Navy's CH-53K Milestone C Component Cost Position in support of CH-53K SDD efforts to include flight test and Prime Contractor fabrication and assembly of SDTA 4-6.

Schedule:
Full Rate Production (FRP) has moved from 2Q FY2020 to 1Q FY2021 to allow for completion of LFT&E program and receipt of test report.
Initial Operational Test & Evaluation (IOT&E) start date moved from 2Q FY2019 to 4Q FY2019 due to discovery during flight test and to incorporate the required corrections.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605212N / *CH-53K*	Project (Number/Name) 3059 / *CH-53K Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3059: *CH-53K Development*	4,812.294	563.174	404.810	340.758	-	340.758	330.755	300.041	195.506	10.522	0.000	6,957.860
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 390

A. Mission Description and Budget Item Justification

The CH-53 is the only marinized heavy-lift helicopter in the world and is the Marine Corps only heavy-lift helicopter. The CH-53 mission is the conduct of expeditionary heavy-lift assault transport of armored vehicles, equipment and personnel to support distributed operations deep inland from a sea-based center of operations. The CH-53E "Super Stallion" was introduced into operations in 1980 as an upgrade version of the CH-53D. The CH-53E has developed performance degradation, fatigue life, interoperability, maintenance supportability, and other operational concerns. An improved CH-53 is needed to support Marine Air-Ground Task Force heavy-lift requirements in the 21st century joint environment. The CH-53K "King Stallion" will provide improvements in range and payload, performance, cargo handling, turn-around times, reliability and maintainability, interoperability, and survivability. The CH-53K program is required to provide full system capability, including shipboard compatibilities, at Initial Operational Capability (IOC).

Total aircraft quantities for the CH-53K program are 205 helicopters. This includes one Ground Test Vehicle (GTV) and four Engineering Development Models (EDMs) for System Development and Demonstration (SDD), to be purchased with Research, Development, Test & Evaluation (RDT&E) funds. Of the remaining 200 aircraft, six will be System Demonstration Test Articles (SDTAs) and will be incrementally funded using RDT&E funds. The SDTAs will be used to prove out production and integration processes on a pilot production line, and to provide aircraft for Initial Operational Test and Evaluation. SDTAs are shown in the year of contract award vice year of delivery. The remaining 194 aircraft will be Aircraft Procurement, Navy funded.

FY18 RDT&E funds CH-53K SDD activities which include: ground and flight test of GTV, EDMs and SDTAs, associated subsystems and components, and the continued fabrication and assembly of the remaining three SDTA aircraft.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Air Vehicle Development	482.025	315.126	271.876	0.000	271.876
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Perform ground and flight test of the CH-53K GTV, EDMs and their associated subsystems and components. Evaluate and implement producability, reliability and capability improvements. Continued fabrication and assembly of System Demonstration Test Articles.					
FY 2017 Plans: Ramp-down of Contractor air vehicle development and ground test activities of the CH-53K GTV, EDMs and associated subsystems and components as developmental test is being conducted. Continue to evaluate					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605212N / *CH-53K*	**Project (Number/Name)** 3059 / *CH-53K Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and implement producability, reliability and capability improvements as fabrication and assembly of System Demonstration Test Articles (SDTA) is completed. Government accepts delivery of SDTAs 1-4 in preparation for IOT&E. ***FY 2018 Base Plans:*** Continue ground and flight test of the CH-53K GTV, EDMs and their associated subsystems and components. Continue to evaluate and implement producability, reliability and capability improvements during fabrication and assembly of System Demonstration Test Articles (SDTA) 4-6. Delivery of Ancillary Defensive Electronic Countermeasures (DECM) hardware and software to Prime Contractor for integration. ***FY 2018 OCO Plans:*** N/A					
Title: Integrated Logistics Support and Test & Evaluation (T&E) ***Articles:*** ***FY 2016 Accomplishments:*** Perform in-house, field activity, and contractor support of Integrated Logistic support. T&E activities include further component qualification and validation of Supportability Test Plans during ground and flight test. Continue to further develop Product Support Packages in preparation for an Integrated Logistics Assessment as required for Milestone C decision. ***FY 2017 Plans:*** Perform in-house, field activity and contractor support of Integrated Logistic support. Continue to refine Product Support Packages in preparation for IOT&E. Increase Government Test Team in order to support ramp-up of ground and flight test activities, as well as continued component qualification and validation of Supportability Test Plans. ***FY 2018 Base Plans:*** Perform in-house, field activity and contractor support of Integrated Logistic support. Continue to refine and validate Product Support Packages in preparation for IOT&E, as well as Supportability Test Plans. Continue component qualification, Government ground and flight test activities, as well as begin LFT&E efforts on the GTV. ***FY 2018 OCO Plans:*** N/A	44.157 -	56.653 -	43.971 -	0.000 -	43.971 -
Title: Systems Engineering & Project Management	36.992	33.031	24.911	0.000	24.911

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605212N / *CH-53K*	**Project (Number/Name)** 3059 / *CH-53K Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Perform in-house, field activity, and contractor support of Integrated Product Teams to allow for the examination and certification of equipment and avionics for the CH-53K. Efforts include Engineering Development Model flight test certification, component reliability and producability improvements in support of System Demonstration Test Articles (SDTA's), monitor LRIP Lot 1 Advance Acquisition Contract, engineering support, program management support, and travel for the CH-53K program.					
FY 2017 Plans: Perform in-house, field activity and contractor support of test program Integrated Product Teams as workforce and resources begin to transition to the CH-53K production program. Efforts include engineering and program management support, as well as travel for the CH-53K program.					
FY 2018 Base Plans: Continue to perform in-house, field activity and contractor support of test program Integrated Product Teams as workforce continues to transition to the CH-53K production program. Monitor and plan for Correction of Deficiencies identified during component qualification and flight test. Efforts include engineering, program management and test program travel.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	563.174	404.810	340.758	0.000	340.758

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN / 0158 / 0158C: *CH-53K (Heavy Lift)*	41.300	436.980	714.651	-	714.651	1,162.257	1,370.939	1,795.367	2,180.215	15,730.881	23,432.590
• APN / 0605: *CH-53K - Initial Spares*	0.000	91.000	41.656	-	41.656	67.668	117.893	103.757	17.304	391.327	830.605
• APN / 0528: *H-53 Series*	0.000	0.000	0.000	-	0.000	19.600	31.700	21.500	28.000	Continuing	Continuing

Remarks

APN/0158/0158C: CH-53K Advanced and Regular Procurement (APN-1)
APN/0605: CH-53K Spares (APN-6)

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605212N / *CH-53K*	**Project (Number/Name)** 3059 / *CH-53K Development*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
APN/0528: CH-53K OSIP #s 007-19 Correction of Deficiencies and 008-19 Production Upgrades											

D. Acquisition Strategy

On 31 October 2005, the Defense Acquisition Board (DAB) reviewed the CH-53K program for a Milestone (MS) B decision on entry to Systems Design and Development (SDD). The Under Secretary of the Defense for Acquisition, Technology and Logistics (USD AT&L) signed the Acquisition Decision Memorandum (ADM) allowing the program to proceed with SDD on 22 December 2005. The CH-53K program was initiated as an Acquisition Category 1D program, based on total estimated costs for Research, Development, Test and Evaluation and Aircraft Procurement, Navy. The SDD prime contract was awarded sole-source contract to Sikorsky Aircraft Corporation on 5 April, 2006, following the MS B decision. SDD efforts will develop and document technology maturations, selections, and integration into CH-53E design modifications for a new CH-53K variant; produce one CH-53K Ground Test Vehicle and four CH-53K Engineering Developmental Models; and conduct and support Test and Evaluation activities fulfilling milestone exit criteria. In FY13 the SDD contract was modified to include four System Demonstration Test Articles (SDTAs). In FY15 the SDD contract was modified to add the long-lead/critical parts for the two additional SDTA aircraft. The T408-GE-400 engines for SDTAs 1-4, which were converted from Contractor Furnished Equipment to Government Furnished Equipment, were placed on contract in FY14. Additionally, a contract option was exercised in FY15 to provide engines for SDTAs 5-6. On 30 March 2017, the DAB reviewed the CH-53K program for a MS C decision allowing entry into Production and the ADM was signed by USD AT&L on 4 April 2017.

E. Performance Metrics

Since MS B, the program team has followed a disciplined, event-driven, design and development process. The program completed Preliminary Design Review in September 2008 and conducted Critical Design Review in July 2010. System meets or exceeds all Key Performance Parameters.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605212N / *CH-53K*	**Project (Number/Name)** 3059 / *CH-53K Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development: SDD / SDTA Air Vehicle	SS/CPIF	Sikorsky : Stratford, CT	3,848.898	408.340	Jan 2016	265.657	Dec 2016	252.568	Dec 2017	-		252.568	722.997	5,498.460	5,498.460
Ancillary Hardware Development: DECM	SS/CPFF	Northrup Grumman : Falls Church, VA	17.789	0.000	Jan 2016	8.572	Jan 2017	7.679	Jan 2018	-		7.679	0.000	34.040	34.040
GFE: Various	Various	Various : Various	62.162	2.100	Dec 2015	1.955	Dec 2016	1.200	Dec 2017	-		1.200	0.000	67.417	-
GFE: Engines	SS/CPFF	GE : Lynn, MA	87.184	14.924	Jan 2016	27.553	Jan 2017	7.000	Jan 2018	-		7.000	1.150	137.811	137.811
Incentive Fees	SS/CPIF	Sikorsky : Stratford, CT	91.471	3.661	Dec 2015	11.389	Dec 2016	3.429	Jan 2018	-		3.429	10.019	119.969	119.969
RAA: JUONS-S0-0010 (DAIRCM)	TBD	Various : Various	0.000	53.000	Sep 2016	0.000		0.000		-		0.000	0.000	53.000	53.000
Prior year Prod Dev cost no longer funded in the FYDP	Various	Various : Various	73.400	0.000		0.000		0.000		-		0.000	0.000	73.400	-
		Subtotal	4,180.904	482.025		315.126		271.876		-		271.876	734.166	5,984.097	-

Remarks

Primary Hardware Development Target Value of Contract includes System Demonstration Test Articles (SDTAs).
Ancillary Hardware Development provides funding for Defensive Electronic Countermeasures (DECM) contract.
Government Furnished Equipment/Engines provides funding for SDTA engine contract.
FY16-18 Incentive Fees are a contractual requirement as potential schedule incentives based on continued progress of the SDTA aircraft.
$53M FY16 RDTE encumbered in support of JUONS-S0-0010, entitled 'Federated Distributed Aperture Infrared Countermeasures' (DAIRCM) via Rapid Acquisition Authority with a planned contract award in September 2016.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various	NAWCAD : Lakehurst, NJ	5.901	1.828	Dec 2015	1.519	Dec 2016	1.360	Dec 2017	-		1.360	1.900	12.508	-
Integrated Logistics Support	WR	NAWCAD : Lakehurst, NJ	16.489	3.705	Dec 2015	3.428	Dec 2016	1.200	Dec 2017	-		1.200	3.329	28.151	-
Integrated Logistics Support	WR	NADEP : Cherry Point, NC	12.859	3.200	Dec 2015	3.057	Dec 2016	1.458	Dec 2017	-		1.458	2.586	23.160	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605212N / *CH-53K*	**Project (Number/Name)** 3059 / *CH-53K Development*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support	C/CPFF	GDIT : Fairfax, VA	14.485	3.282	Apr 2016	2.906	Apr 2017	1.960	Apr 2018	-		1.960	4.567	27.200	27.200
Integrated Logistics Support	WR	Various : Various	36.026	1.319	Dec 2015	2.075	Dec 2016	1.792	Dec 2017	-		1.792	3.632	44.844	-
Government Engineering Support	WR	NAWCTSD : Orlando, FL	4.137	1.800	Dec 2015	3.386	Dec 2016	2.257	Dec 2017	-		2.257	2.400	13.980	-
Studies & Analyses	WR	NSWC : Crane, IN	3.500	0.000		0.000		0.000		-		0.000	0.000	3.500	-
Studies & Analyses	Various	Various : Various	22.127	0.000		0.000		0.000		-		0.000	0.000	22.127	-
		Subtotal	115.524	15.134		16.371		10.027		-		10.027	18.414	175.470	-

Remarks

NAWC TSD training systems previously captured under "Integrated Logistic Support - Various" are now contained in the Government Engineering support line.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	Various : Various	22.793	3.841	Dec 2015	4.250	Dec 2016	1.500	Dec 2017	-		1.500	3.569	35.953	-
Developmental Test & Evaluation	WR	NAWCAD : Pax River, MD	46.348	21.557	Dec 2015	31.443	Dec 2016	27.945	Dec 2017	-		27.945	38.576	165.869	-
Operational Test & Evaluation	WR	COMPTEVFOR : Norfolk, VA	2.925	0.745	Dec 2015	1.157	Dec 2016	1.099	Dec 2017	-		1.099	7.937	13.863	-
Live Fire Test & Evaluation	WR	NAWCWD : China Lake, CA	10.128	2.880	Dec 2015	3.432	Dec 2016	3.400	Dec 2017	-		3.400	4.500	24.340	-
		Subtotal	82.194	29.023		40.282		33.944		-		33.944	54.582	240.025	-

Remarks

Test and Evaluation requirements peak in FY17 as System Demonstration Test Articles (SDTAs) are delivered to the CH-53K Integrated Test Team (ITT).

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605212N / *CH-53K*	Project (Number/Name) 3059 / *CH-53K Development*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	Various	Various : Various	21.567	4.163	Dec 2015	4.197	Dec 2016	3.500	Dec 2017	-		3.500	6.038	39.465	-
Government Engineering Support	WR	NAWCAD : Pax River, MD	297.348	26.720	Dec 2015	23.054	Dec 2016	17.542	Dec 2017	-		17.542	13.367	378.031	-
Program Management Support	C/CPFF	Camber : Huntsville, AL	41.708	0.000		0.000		0.000		-		0.000	0.000	41.708	41.708
Program Management Support	C/CPFF	Zenetix : Herndon, VA	7.528	4.750	Jan 2016	4.451	Jan 2017	2.744	Jan 2018	-		2.744	6.939	26.412	26.412
Program Management Support	Various	Various : Various	59.803	1.159	Dec 2015	1.129	Dec 2016	1.000	Dec 2017	-		1.000	2.918	66.009	-
Travel	WR	NAWCAD : Pax River, MD	3.768	0.200	Dec 2015	0.200	Dec 2016	0.125	Dec 2017	-		0.125	0.400	4.693	-
Prior year Mgmt cost no longer funded in the FYDP	Various	Various : Various	1.950	0.000		0.000		0.000		-		0.000	0.000	1.950	-
		Subtotal	433.672	36.992		33.031		24.911		-		24.911	29.662	558.268	-

Remarks

Management Services requirements continue to decrease in FY17 and FY18 as both Government and Contractor support begins transition to the CH-53K Production program.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	4,812.294	563.174		404.810		340.758		-		340.758	836.824	6,957.860	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605212N / *CH-53K*	**Project (Number/Name)** 3059 / *CH-53K Development*

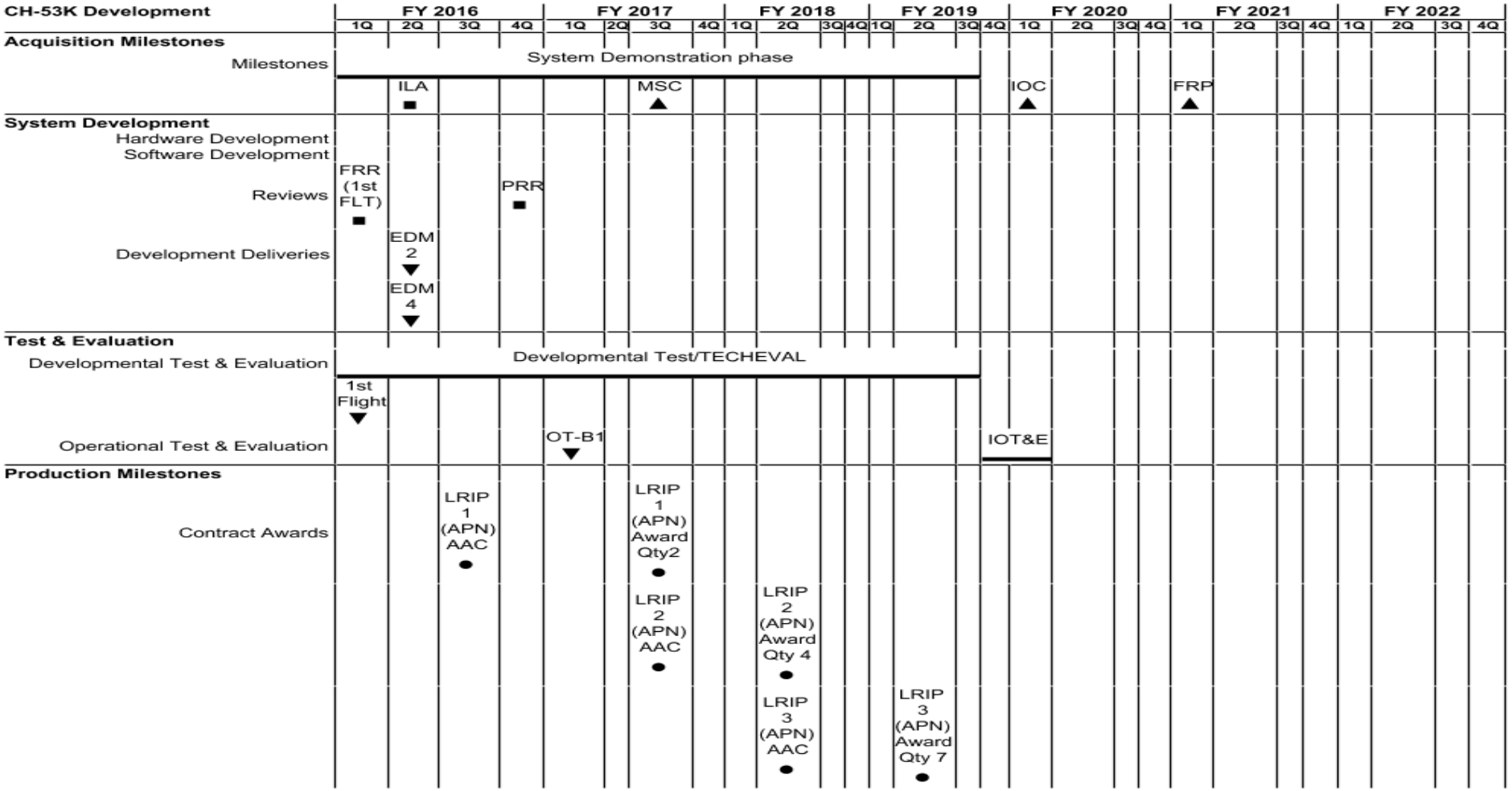
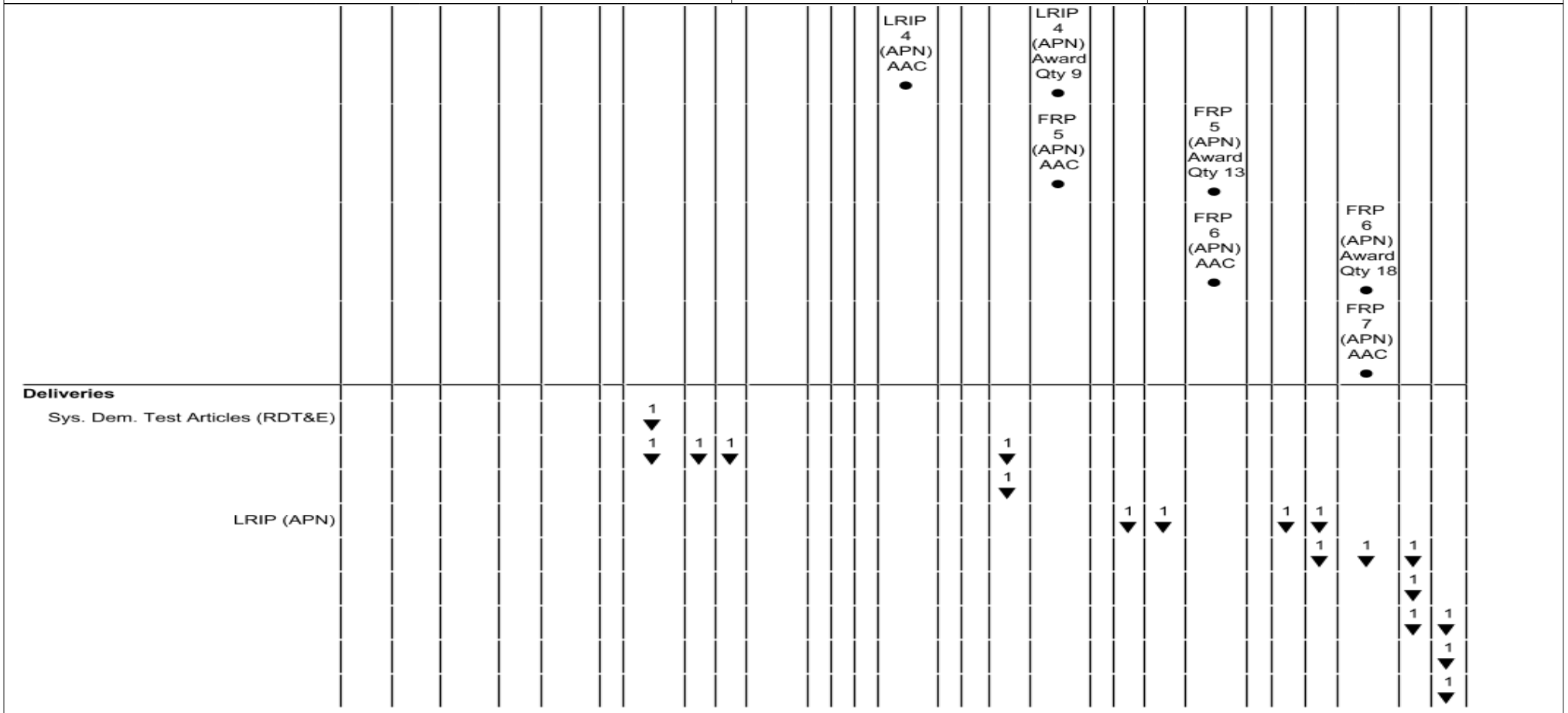


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605212N / *CH-53K*	**Project (Number/Name)** 3059 / *CH-53K Development*



2018PB - 0605212N - 3059

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605212N / *CH-53K*	**Project (Number/Name)** 3059 / *CH-53K Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CH-53K Development				
Acquisition Milestones: Milestones: System Demonstration phase	1	2016	3	2019
Acquisition Milestones: Milestones: Integrated Logistics Assessment (ILA)	2	2016	2	2016
Acquisition Milestones: Milestones: Milestone C	3	2017	3	2017
Acquisition Milestones: Milestones: Initial Operational Capability	1	2020	1	2020
Acquisition Milestones: Milestones: Full Rate Production	1	2021	1	2021
System Development: Reviews: Flight Readiness Review (FRR) - 1st Flight	1	2016	1	2016
System Development: Reviews: Production Readiness Review (PRR)	4	2016	4	2016
System Development: Development Deliveries: Engineering Development Model (EDM) #2 delivery	2	2016	2	2016
System Development: Development Deliveries: Engineering Development Model (EDM) #4 delivery	2	2016	2	2016
Test & Evaluation: Developmental Test & Evaluation: Developmental Test / TECHEVAL	1	2016	3	2019
Test & Evaluation: Developmental Test & Evaluation: First Flight	1	2016	1	2016
Test & Evaluation: Operational Test & Evaluation: Operational Test & Evaluation (OT) B1 (OT-B1)	1	2017	1	2017
Test & Evaluation: Operational Test & Evaluation: IOT&E	4	2019	1	2020
Production Milestones: Contract Awards: LRIP Advance Acquisition Contract (lot 1) - APN	3	2016	3	2016
Production Milestones: Contract Awards: LRIP 1 Contract Award - APN Qty 2	3	2017	3	2017
Production Milestones: Contract Awards: LRIP Advance Acquisition Contract (lot 2) - APN	3	2017	3	2017
Production Milestones: Contract Awards: LRIP 2 Contract Award - APN Qty 4	2	2018	2	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605212N / *CH-53K*	**Project (Number/Name)** 3059 / *CH-53K Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Milestones: Contract Awards: LRIP Advance Acquisition Contract (lot 3) - APN	2	2018	2	2018
Production Milestones: Contract Awards: LRIP 3 Contract Award - APN Qty 7	2	2019	2	2019
Production Milestones: Contract Awards: LRIP Advance Acquisition Contract (lot 4) - APN	2	2019	2	2019
Production Milestones: Contract Awards: LRIP 4 Contract Award - APN Qty 9	2	2020	2	2020
Production Milestones: Contract Awards: FRP Advance Acquisition Contract (lot 5) - APN	2	2020	2	2020
Production Milestones: Contract Awards: FRP 5 Contract Award - APN Qty 13	2	2021	2	2021
Production Milestones: Contract Awards: FRP Advance Acquisition Contract (lot 6) - APN	2	2021	2	2021
Production Milestones: Contract Awards: FRP 6 Contract Award - APN Qty 18	2	2022	2	2022
Production Milestones: Contract Awards: FRP Advance Acquisition Contract (lot 7) - APN	2	2022	2	2022
Deliveries: Sys. Dem. Test Articles (RDT&E): System Demonstration Test Articles (SDTA) #1	3	2017	3	2017
Deliveries: Sys. Dem. Test Articles (RDT&E): System Demonstration Test Articles (SDTA) #2	3	2017	3	2017
Deliveries: Sys. Dem. Test Articles (RDT&E): System Demonstration Test Articles (SDTA) #3	4	2017	4	2017
Deliveries: Sys. Dem. Test Articles (RDT&E): System Demonstration Test Articles (SDTA) #4	1	2018	1	2018
Deliveries: Sys. Dem. Test Articles (RDT&E): System Demonstration Test Articles (SDTA) #5	1	2020	1	2020
Deliveries: Sys. Dem. Test Articles (RDT&E): System Demonstration Test Articles (SDTA) #6	1	2020	1	2020
Deliveries: LRIP (APN): LRIP Lot #1 1st delivery of 2	4	2020	4	2020
Deliveries: LRIP (APN): LRIP Lot #1 2nd delivery of 2	1	2021	1	2021
Deliveries: LRIP (APN): LRIP Lot #2 1st delivery of 4	4	2021	4	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605212N / *CH-53K*	**Project (Number/Name)** 3059 / *CH-53K Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Deliveries: LRIP (APN): LRIP Lot #2 2nd delivery of 4	1	2022	1	2022
Deliveries: LRIP (APN): LRIP Lot #2 3rd delivery of 4	1	2022	1	2022
Deliveries: LRIP (APN): LRIP Lot #2 4th delivery of 4	2	2022	2	2022
Deliveries: LRIP (APN): LRIP Lot #3 1st delivery of 7	3	2022	3	2022
Deliveries: LRIP (APN): LRIP Lot #3 2nd delivery of 7	3	2022	3	2022
Deliveries: LRIP (APN): LRIP Lot #3 3rd delivery of 7	3	2022	3	2022
Deliveries: LRIP (APN): LRIP Lot #3 4th delivery of 7	4	2022	4	2022
Deliveries: LRIP (APN): LRIP Lot #3 5th delivery of 7	4	2022	4	2022
Deliveries: LRIP (APN): LRIP Lot #3 6th delivery of 7	4	2022	4	2022

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605215N *I (U)Mission Planning*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	0.000	33.570	33.430	-	33.430	33.570	33.599	34.298	34.978	Continuing	Continuing
2213: *Mission Planning*	0.000	0.000	21.779	21.580	-	21.580	21.477	21.335	21.782	22.216	Continuing	Continuing
2311: *Stores Planning and Weaponeering Module*	0.000	0.000	11.153	11.185	-	11.185	11.412	11.569	11.807	12.039	Continuing	Continuing
2312: *Common Helicopters*	0.000	0.000	0.638	0.665	-	0.665	0.681	0.695	0.709	0.723	Continuing	Continuing

Note

Prior to FY17, Mission Planning (PU 2213) was funded under PE 0604231N; Stores Planning and Weaponeering Module (PU 2311) and Common Helicopters (PU 2312) were funded under PE 0604215N.

FY 2018 funding request reflect a reduction of $0.497 million to account for the availability of prior year funds.

A. Mission Description and Budget Item Justification

Mission Planning PE is used to develop automated mission planning systems to support Naval Aviation.

Joint Mission Planning System (JMPS) is the designated automated mission planning system for the Navy, supporting over 40 T/M/S and expeditionary forces. JMPS-M enables weapon system employment by providing the information, automated tools, and decision aids needed to rapidly plan aircraft, weapon, or sensor missions, load mission data into aircraft and weapons, and conduct mission rehearsal and post-mission analysis. JMPS-E is a scalable, tailorable, mission planning and execution monitoring tool for Amphibious Squadron staffs.

Stores Planning and Weaponeering Module, also referred to as Weaponeering and Stores Planning (WASP), is an integrated software product that allows aircrew to determine the best combinations of weapons and delivery conditions to achieve the desired level of target damage, eliminate weapon delivery solutions that violate aircraft Type/Model/Series (T/M/S) specific safety-of-flight envelopes, and perform detailed weapons employment planning for F/A-18 and E/A-18G aircraft.

Common Helicopters is used to develop unique planning capabilities for helicopters for integration into Joint Mission Planning System (JMPS).

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under MISSION PLANNING because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production decision.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0605215N *I (U)Mission Planning*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	0.000	33.570	34.230	-	34.230
Current President's Budget	0.000	33.570	33.430	-	33.430
Total Adjustments	0.000	0.000	-0.800	-	-0.800
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	-0.528	-	-0.528
• Rate/Misc Adjustments	0.000	0.000	-0.272	-	-0.272

Change Summary Explanation

Technical: N/A

Schedule:

2213:
Prior to FY17, schedule for the Joint Mission Planning Systems (JMPS) profile is under PE 0604231N.

The Increment 4/64-bit development effort was originally scheduled to be completed in Q4 of 2017. However, the program has since modified the contract, extending the period of performance to February 2018 to better leverage collaborative development efforts with the Air Force. No savings are associated with this extension because MPE integration efforts are concurrent with development efforts in FY17 & FY18.

2311:
Prior to FY17, schedule for Stores Planning and Weaponeering Module profile is under PE 0604215N.

2312:
Prior to FY17, schedule for the Common Helicopter profile is under PE 0604215N.

Common Helo Test and Evaluation period added starting in 1QTR FY18 to identify the integration and test activities for Common Helo Components into the JMPS FW.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605215N / *(U)Mission Planning*	Project (Number/Name) 2213 / *Mission Planning*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2213: *Mission Planning*	0.000	0.000	21.779	21.580	-	21.580	21.477	21.335	21.782	22.216	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Prior to FY17, Mission Planning (PU 2213) was budgeted under Tactical Command System PE 0604231N.

A. Mission Description and Budget Item Justification

Joint Mission Planning System (JMPS) is the designated automated mission planning system for the DoN, supporting maritime and expeditionary forces. JMPS-Maritime (JMPS-M) is the designated automated mission planning system for naval aviation, supporting over 40 T/M/S of U.S. Navy and Marine Corps aircraft. JMPS enables weapon system employment by providing the information, automated tools, and decision aids needed to rapidly plan aircraft, weapon, or sensor missions, load mission data into aircraft and weapons, and conduct post-mission analysis. JMPS is a mission critical system which is a co-development effort between the United States Navy (USN) and United States Air Force (USAF). Common requirements are identified and core JMPS capabilities are developed and prioritized in an evolutionary approach. An individual JMPS Mission Planning Environment (MPE) is a combination of the JMPS framework, common components, unique planning components (UPCs), federated applications, and the necessary system hardware required to satisfy mission planning objectives. Most tactical naval aviation platforms are dependent solely on JMPS to plan precision guided munitions, sensor systems, tactical data links, secure voice communications, and basic Safety of Flight functions.

The JMPS Increment 4 release delivers JMPS FW 1.5 and transitions JMPS from Windows 7/32-bit Operating System (OS) to Windows 10/64-bit OS. Transition to 64-bit allows for memory space expansion to accommodate future Microsoft Operating Systems, emerging technologies, and critical cybersecurity updates. Increment 4 development requires software conversion and refactoring to address memory limitations and system errors resulting in JMPS computer crashes. The transition from the current 32-bit architecture to a 64-bit architecture provides additional memory access, increased planning efficiencies; creating an increased stability in the architecture resulting in fewer system crashes and improved cybersecurity. Delaying JMPS 64-bit transition efforts (Increment 4) will allow existing system crashes to persist, and will decrease system stability in the future due to platform capability enhancements that require increased amounts of data and processing power.

Next Generation Naval Mission Planning, a new start program in 2018, will provide a new mission planning system, with improved mission management, and post-flight mission analysis capabilities on a modular/services architecture. Next Generation Naval Mission Planning will deliver collaboration and automation capabilities and provide revolutionary improvements in workflow, usability, cybersecurity, portability of mission planning, mission management, and post-flight mission analysis functions across multiple hardware configurations.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Mission Planning Environment Program Mgmt, Integration, and Test	0.000	11.471	12.744	0.000	12.744
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2213 / *Mission Planning*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Mission Planning Environment (MPE) Integration and Test efforts support the Navy's developmental testing/operational testing, integration and system of system testing for MPE fielding, integrating, testing, and managing the Electronic Kneeboard (EKB) efforts. Life-cycle management efforts consist of integration of components provided by various developers into a platform-centric MPE and testing of the integrated MPE. MPE integration and testing results in a consistent and repeatable system configuration that enables stability and reliability. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Continue integration and testing, project management and systems engineering for current MPEs as well as supporting future releases of JMPS and Electronic Kneeboard (EKB) software to the fleet. ***FY 2018 Base Plans:*** Continue integration and testing, project management and systems engineering for current MPEs. Continue integration for three new variants of the C/KC-130J and wireless JMPS and EKB efforts. These wireless efforts will require additional testing and integration to meet cyber mandates. Continue supporting future releases of JMPS and Electronic Kneeboard (EKB) software to the fleet. Begin Next Generation Naval Mission Planning requirement analysis. ***FY 2018 OCO Plans:*** N/A					
Title: Joint Mission Planning System Expeditionary (JMPS-E) ***Articles:*** ***Description:*** JMPS Expeditionary (JMPS-E): The goal of JMPS-E is to produce a scalable, tailorable, mission planning and execution monitoring tool for Amphibious Squadron staffs. The primary focus of this system is to provide an automated capability to assist planners with mission analysis, course of action development and automated creation of doctrinal orders based on planning data in the system. Current expeditionary planning is done manually on paper charts. JMPS-E provides a digital map enabling better response times to changing plans, easier distribution of planning artifacts and a reduction in human error during the planning process. The variety and geographically separated nature of forces involved with Ship to Shore Maneuver amplifies the need for web-based technologies to enable collaborative planning, improve overall situational awareness and enable the monitoring of mission execution from different locations. The primary outputs are tasking orders, route plans,	0.000 -	0.908 -	0.946 -	0.000 -	0.946 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2213 / *Mission Planning*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
battlespace geometries and decision briefs. The system will also incorporate modeling and simulation tools to rehearse and deconflict mission plans. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Complete testing of JMPS-E MPE Version 2.1. Development, integration and testing of JMPS-E MPE Version 3.0 ***FY 2018 Base Plans:*** Continue integration and testing of JMPS-E MPE Version 3.0. ***FY 2018 OCO Plans:*** N/A					
Title: JMPS Framework (FW) and Common Components (CC) Development ***Articles:*** ***Description:*** Continue integration of JMPS 64-bit FW Version 1.5 which provides additional capabilities for all naval aircraft to include airdrop, air refueling, and enhanced installations. Funding for FW will be used to support system engineering processes, management interface controls, software architectural analysis, requirements management and a centralized website for Mission Planning Environment (MPE) developers. As platform(s) requirements emerge for new and enhanced mission planning capabilities, the demand for more complex integrated applications and software products increases. Without this planned transition to a 64-Bit architecture, the volume of integrated mission planning capability for the fleet will be limited. Common Components software updates augment core mission planning capabilities across multiple T/M/S. The JMPS FW and Common Components will also transition to Windows 10. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Continue implementation of the Increment-4 JMPS Framework Core 64-bit development transition activities. Major events include the development of Cybersecurity safeguards addressing IA mandates, development of additional JMPS help features, and code conversion for the JMPS Core Framework (Basic Flight Planning Capabilities) and Common Components for MPE/UPCs including significant efforts for the F/A-18 A-F and E/A-18G platforms. In addition, efforts include initiation of 64-bit transition development for JMPS Common	0.000 -	9.400 -	7.890 -	0.000 -	7.890 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2213 / *Mission Planning*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Components used by multiple platforms. The transition of the JMPS Common Components are aligned to meet platform(s) requirements for new and enhanced mission planning capability in a 64-bit environment. The 64-bit transition is required to address system performance issues (RAM) with the fielded Mission Planning Environment (MPE); thus reducing system crashes while improving mission planning performance for the fleet. ***FY 2018 Base Plans:*** Continue the Increment-4 JMPS Framework Core 64-bit development transition activities. Major activities include completing the 64-bit development and transitioning to the Windows 10 operating system used by multiple platforms. The transition of the JMPS Common Components are aligned to meet platform(s) requirements for new and enhanced mission planning capability in a 64-bit environment. The 64-bit transition is required to address system performance issues (RAM) with the fielded Mission Planning Environment (MPE); thus reducing system crashes while improving mission planning performance for the fleet. All Common Components software updates across multiple T/M/S will be completed to support Increment 4 MPE integration efforts. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	21.779	21.580	0.000	21.580

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The initial Joint Mission Planning System (JMPS) development effort was a phased evolutionary approach. Multiple contracts were awarded during initial development. During the down-select process, one contractor was selected to develop the JMPS architecture work and Version 1.0 basic flight planning components. Additional phases focused on strike planning requirements (i.e., support Precision Guided Missions and other tactical data intensive missions) in order to migrate platforms from legacy mission planning systems to JMPS. The USAF continued development of JMPS Framework Versions 1.3 and 1.5 and owns the Mission Planning Enterprise Contract, which is used for JMPS Framework software development. The USN integration and fielding strategy supports a Mission Planning Environment (MPE) focus, where the JMPS Framework and other software components are integrated, tested, and fielded by T/M/S. The USN Increment 4, and beyond, will address increased Mission Planning system capabilities required by the 21st Century Warfighter and modernizes the architecture of JMPS to address technological obsolescence. As platforms plan their migration to newer versions of JMPS, the acquisition strategy, plan, and program baseline will be updated in order to divest legacy mission planning systems, meet the evolving requirements for integrated mission planning, and lower total life cycle cost.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2213 / *Mission Planning*

E. Performance Metrics

Average time to plan a flight: Threshold value is < 1 hour average time to plan a flight that includes a Military Training Route (MTR), routing to and from the MTR, kneeboard card production, Instrument Flight Rules (IFR) flight planning materials and a Data Transfer Device (DTD) Load. Objective value is < 30 minutes average time to plan a flight that includes a MTR, routing to and from the MTR, kneeboard card production, IFR flight planning materials and a DTD Load.

Interoperability: Threshold value is 100% of top level Interoperability Exchange Requirements (IERs) designated critical will be satisfied. Objective value is 100% of top level IERs will be satisfied.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2213 / *Mission Planning*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Software Development/JMPS Expeditionary	C/CPFF	various : various	0.000	0.000		0.400	Feb 2017	0.650	Feb 2018	-		0.650	Continuing	Continuing	Continuing
Primary Software Development, Inc 4	C/CPFF	Northrop Grumman : Long Beach, CA	0.000	0.000		4.500	Feb 2017	1.500	Feb 2018	-		1.500	0.000	6.000	6.000
Primary Software Development/(Human Factors)	C/CPFF	Georgia Technical Research Institute (GTRI) : Atlanta, GA	0.000	0.000		1.500	Mar 2017	1.000	Mar 2018	-		1.000	0.000	2.500	2.500
Primary Software Development FW	C/CPFF	TBD : TBD	0.000	0.000		1.600	May 2017	2.890	Jan 2018	-		2.890	Continuing	Continuing	Continuing
Primary Software Development	C/CPFF	Leidos : Orlando, FL	0.000	0.000		1.800	Feb 2017	2.500	Feb 2018	-		2.500	0.000	4.300	4.300
		Subtotal	0.000	0.000		9.800		8.540		-		8.540	-	-	-

Remarks

The FY18 Primary Software Development FW effort is a competitive 3rd Qtr. FY17 award therefore the performing activity and location are currently TBD to support a competitive contracting strategy. This contract consists of a base year (FY17) and future option years that will affect the current budget year. Once awarded, the performing activity and location will be updated to reflect the selected contractor.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support	WR	NAWCWD : Point Mugu, CA	0.000	0.000		0.208	Nov 2016	0.212	Nov 2017	-		0.212	Continuing	Continuing	Continuing
Systems Eng & Integration	WR	NAWCWD : Point Mugu, CA	0.000	0.000		2.487	Nov 2016	2.324	Nov 2017	-		2.324	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.000	Nov 2016	1.300	Nov 2017	-		1.300	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		3.695		3.836		-		3.836	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605215N / *(U)Mission Planning*	Project (Number/Name) 2213 / *Mission Planning*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation	WR	NAWCWD : Point Mugu, CA	0.000	0.000		5.675	Nov 2016	5.579	Nov 2017	-		5.579	Continuing	Continuing	Continuing
Test & Evaluation	WR	COMOPTEVFOR : Norfolk, VA	0.000	0.000		0.700	Jan 2017	1.350	Jan 2018	-		1.350	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		6.375		6.929		-		6.929	-	-	-

Remarks

The increase in FY18 COMOPTEVFOR Operational Test (OT) support is due to increased testing for new platforms transitioning to JMPS, increased testing requirements required for new cyber requirements, and additional testing required for the incorporation of new wireless technologies for multiple JMPS platforms

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support and Travel	WR	NAWCAD : Patuxtent River, MD	0.000	0.000		1.400	Nov 2016	1.600	Nov 2017	-		1.600	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	Ausley Associates : Lexington Park, MD	0.000	0.000		0.509	Mar 2017	0.675	Jan 2018	-		0.675	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		1.909		2.275		-		2.275	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		21.779		21.580		-		21.580	-	-	-

Remarks

Prior to FY17, the Mission Planning PU 2213 was funded under PE 0604231N

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2213 / *Mission Planning*

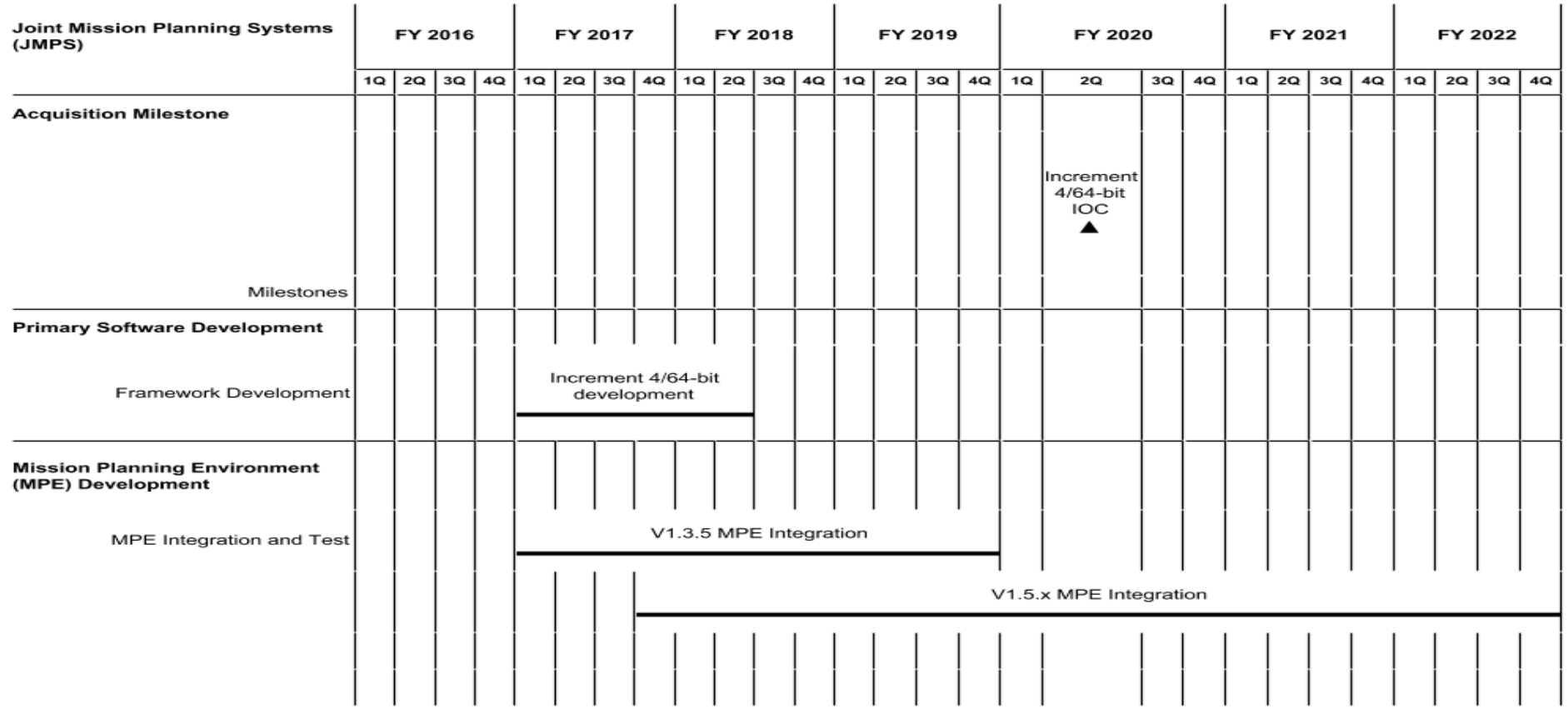


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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2213 / *Mission Planning*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Joint Mission Planning Systems (JMPS)				
Acquisition Milestone: JMPS FW Increment 4/ 64-Bit Initial Operational Capability (IOC)	2	2020	2	2020
Primary Software Development: Framework Development: JMPS FW Increment 4/ 64-Bit Architecture Development	1	2017	2	2018
Mission Planning Environment (MPE) Development: MPE Integration and Test: V1.3.5 MPE Integration	1	2017	4	2019
Mission Planning Environment (MPE) Development: MPE Integration and Test: V1.5.x MPE Integration	4	2017	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605215N / *(U)Mission Planning*	Project (Number/Name) 2311 / *Stores Planning and Weaponeering Module*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2311: *Stores Planning and Weaponeering Module*	0.000	0.000	11.153	11.185	-	11.185	11.412	11.569	11.807	12.039	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Prior to FY17, Stores Planning and Weaponeering Module (PU 2311) was budgeted under Standards Development (PE 0604215N).

A. Mission Description and Budget Item Justification

The Weaponeering and Stores Planning (WASP) components, are integrated software products that allow aircrew to determine the best combinations of weapons and delivery conditions to achieve the desired level of target damage, eliminate weapon delivery solutions that violate aircraft Type/Model/Series (T/M/S) specific safety-of-flight envelopes, and perform detailed weapons employment planning. WASP is approved by Air Warfare Division (N98) as a flight clearance implementation system for the F/A-18 A, A+, B, C, D, D (RC), E, F, EA-18G; potential support for other platforms, to include F-35. WASP components will alert pilots if their planned weapon release conditions meet flight clearance limits, will result in bomb-to-bomb collisions, bomb-to-aircraft collisions, aircraft overstress, or excessive risk of aircraft loss/damage in the event of fuze early bursts. Weapon employment planning is fundamental to the Joint Capability Area of Force Application and joint mission areas of Strike and Amphibious Warfare. WASP provides the Navy and Marine Corp with weaponeering capabilities that are critical requirements for Interdiction, Armed Reconnaissance and Close Air Support mission planning. Therefore, WASP product availability is critical to successful employment of the Joint Mission Planning System (JMPS) for the F/A-18 A-F and EA-18G. The WASP product encompasses a multitude of Government Furnished Information software components and tools (aircraft target maneuver simulations, weapon flyout models, target probability of damage calculators). WASP products will require updates as emergent requirements for new aircraft T/M/S, stores and weapons are approved, new flight clearances and flight restrictions are issued by Naval Air Systems Command Headquarters (NAVAIRSYSCOM), and developing WASP as a software application.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development	0.000	5.876	5.803	0.000	5.803
Articles:	-	-	-	-	-
Description: Includes associated system engineering design, development, installation, integration and software development for Weaponeering and Stores Planning (WASP) components v3.x and v4.x to support F/A-18 A-F and EA-18G. Define requirements to integrate WASP components into the Joint Mission Planning System (JMPS). Provide domain engineering support for weapons separation, aircraft loads, flutter, fuzing and safe escape for application to WASP. Provide analysis of new requirements, allocation of requirements, design oversight, and life cycle management of the WASP program. Develop new aircraft configuration, aircraft loading, weapon optimization, store release and delivery planning components for F/A-18 A-F and EA-18G new flight					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2311 / *Stores Planning and Weaponeering Module*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
clearances and flight restrictions issued by NAVAIRSYSCOM. Provide configuration management, system administration, quality assurance, documentation, metrics and software risk management for WASP. Acquire, integrate and modify numerous Government Furnished Information (GFI) software components and tools (aircraft target maneuver simulations, weapon flyout models, target probability of damage calculators, etc.) that are used for the WASP software development. Integrate WASP with Joint Standoff Weapon/Joint Direct Attack Munitions/Standoff Land-Attack Missile - Expanded Response and other weapons mission planning systems as required. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Continue WASP v4.0 development and release multiple database updates. Further define requirements for WASP V4.1 ***FY 2018 Base Plans:*** Complete WASP V4.0 development. Begin the development of WASP 4.1 and the release of multiple database updates. ***FY 2018 OCO Plans:*** N/A					
Title: Test and Evaluation (T&E) ***Articles:*** ***Description:*** Provide test and evaluation for unit and system level testing; functional qualification testing; safety of flight certification testing; integration and standards compliance testing for Weaponeering and Stores Planning (WASP) versions v3.x and v4.x. Provide Joint Mission Planning System Mission Planning Environment Integration test support. Provide testing and test support to ensure all (to include internally developed software, externally developed GFI) components comply with Department of Navy (DoN) and Department of Defense (DoD) software mandates and directives. These include Integrated Shipboard Network System IT-21, Risk Management Framework (RMF), Navy Marine Corps Intranet (NMCI) and DoD Information Technology Portfolio Repository. All Fleet released software must comply with DoN and DoD software directives or will not be allowed to run on ship Local Area Networks or NMCI. ***FY 2016 Accomplishments:***	0.000 -	2.266 -	2.194 -	0.000 -	2.194 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2311 / *Stores Planning and Weaponeering Module*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** Complete test and evaluation of WASP major v3.3 and release to the Fleet. Begin testing of WASP major v4.0. Complete test and evaluation of multiple database updates. ***FY 2018 Base Plans:*** Complete test and evaluation of WASP major V4.0 to support an FY19 release to the Fleet. Complete test and evaluation of multiple database updates. ***FY 2018 OCO Plans:*** N/A					
Title: Program Management/Systems Engineering ***Articles:*** ***Description:*** Provide program management and systems engineering support, which includes requirements definition and analysis, compliance with Naval Air Systems Command systems engineering technical review processes, acquisition documentation development, cost, schedule and performance management, and compliance with external directives. Provide travel for government personnel. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Continue project management and systems engineering support to the WASP for future software releases to the fleet. Additional support will be required for multiple database releases. ***FY 2018 Base Plans:*** Continue project management and systems engineering support to the WASP for future software releases to the fleet. Additional support will be required for multiple database releases. ***FY 2018 OCO Plans:*** N/A	0.000 -	3.011 -	3.188 -	0.000 -	3.188 -
Accomplishments/Planned Programs Subtotals	0.000	11.153	11.185	0.000	11.185

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2311 / *Stores Planning and Weaponeering Module*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Weaponeering and Stores Planning (WASP) products, delivered annually, were developed in-house by NAVAIR consisting of Naval Air Warfare Center Aircraft Division and Naval Air Warfare Center Weapons Division engineers and support contractors. The team has now migrated to a smaller government team that provides functional expertise in aircraft safety-of-flight (air-vehicle stores compatibility, weapons separation, aircraft aerodynamic flutter, ground/flight loads, authorized fuze arm times, aircraft safe escape), guided weapons employment and weapons effects against targets, with the majority of the software development conducted by various contractors. The Government, engineering, test, and support teams (test facilities, functional qualification testing and certification/accreditation test) are supplemented with contractor labor.

E. Performance Metrics

Average time to plan a flight: Threshold value is < 1 hour average time to plan a flight that includes full aircraft loadout and weapons delivery safe escape planning. Objective value is < 15 minutes average time to plan a flight that includes full aircraft loadout and weapons delivery safe escape planning. End product is a pilot's z-diagram knee board card.

Interoperability: Threshold value is 100% stand alone value.
Objective value is 100% stand alone value.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2311 / *Stores Planning and Weaponeering Module*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	WR	Naval Air Warfare Center Aircraft Division NAWCAD : Patuxent River, MD	0.000	0.000		0.177	Nov 2016	0.102	Nov 2017	-		0.102	Continuing	Continuing	Continuing
Product Development	WR	Air Force Seek Eagle : Hill Air Force Base, UT	0.000	0.000		0.083	Mar 2017	0.085	Mar 2018	-		0.085	Continuing	Continuing	Continuing
Primary Software Development	C/CPFF	DCS Corp : Alexandria, VA	0.000	0.000		1.721	Feb 2017	1.721	Feb 2018	-		1.721	0.000	3.442	3.442
Product Development	C/CPFF	TBD : TBD	0.000	0.000		3.895	Apr 2017	3.895	Mar 2018	-		3.895	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		5.876		5.803		-		5.803	-	-	-

Remarks

The FY18 Product Development contract will be a competitive 3rd Qtr. FY17 award so the performing activity and location are currently TBD due to the competitive contracting strategy. Contract is on track. This contract consists of a base year (FY17) and future option years that will affect the current budget year. Once awarded, the performing activity and location will be updated to reflect the selected contractor.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation (Gov't)	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.142	Nov 2016	1.303	Nov 2017	-		1.303	Continuing	Continuing	Continuing
Test & Evaluation (Contractor)	C/CPFF	DCS Corp : Alexandria, VA	0.000	0.000		1.124	Mar 2017	0.891	Mar 2018	-		0.891	0.000	2.015	2.015
		Subtotal	0.000	0.000		2.266		2.194		-		2.194	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2311 / *Stores Planning and Weaponeering Module*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering and Program Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.100	Nov 2016	1.200	Nov 2017	-		1.200	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	TBD : TBD	0.000	0.000		0.441	Mar 2017	0.450	Jan 2018	-		0.450	0.000	0.891	0.891
Government Engineering Support: Guided Weapons	WR	Naval Air Warfare Center Weapons Division NAWCWD : China Lake, CA	0.000	0.000		0.023	Jan 2017	0.223	Jan 2018	-		0.223	Continuing	Continuing	Continuing
Systems Engineering Support	C/CPFF	Wyle : Huntsville, AL	0.000	0.000		1.357	Jan 2017	1.200	Jan 2018	-		1.200	0.000	2.557	2.557
Govt Engineering Support: Mission Planning Environment Integration	WR	NAWCWD : Point Mugu, CA	0.000	0.000		0.080	Nov 2016	0.100	Nov 2017	-		0.100	Continuing	Continuing	Continuing
Travel	Various	NAVAIR : Patuxent River, MD	0.000	0.000		0.010	Nov 2016	0.015	Nov 2017	-		0.015	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		3.011		3.188		-		3.188	-	-	-

Remarks

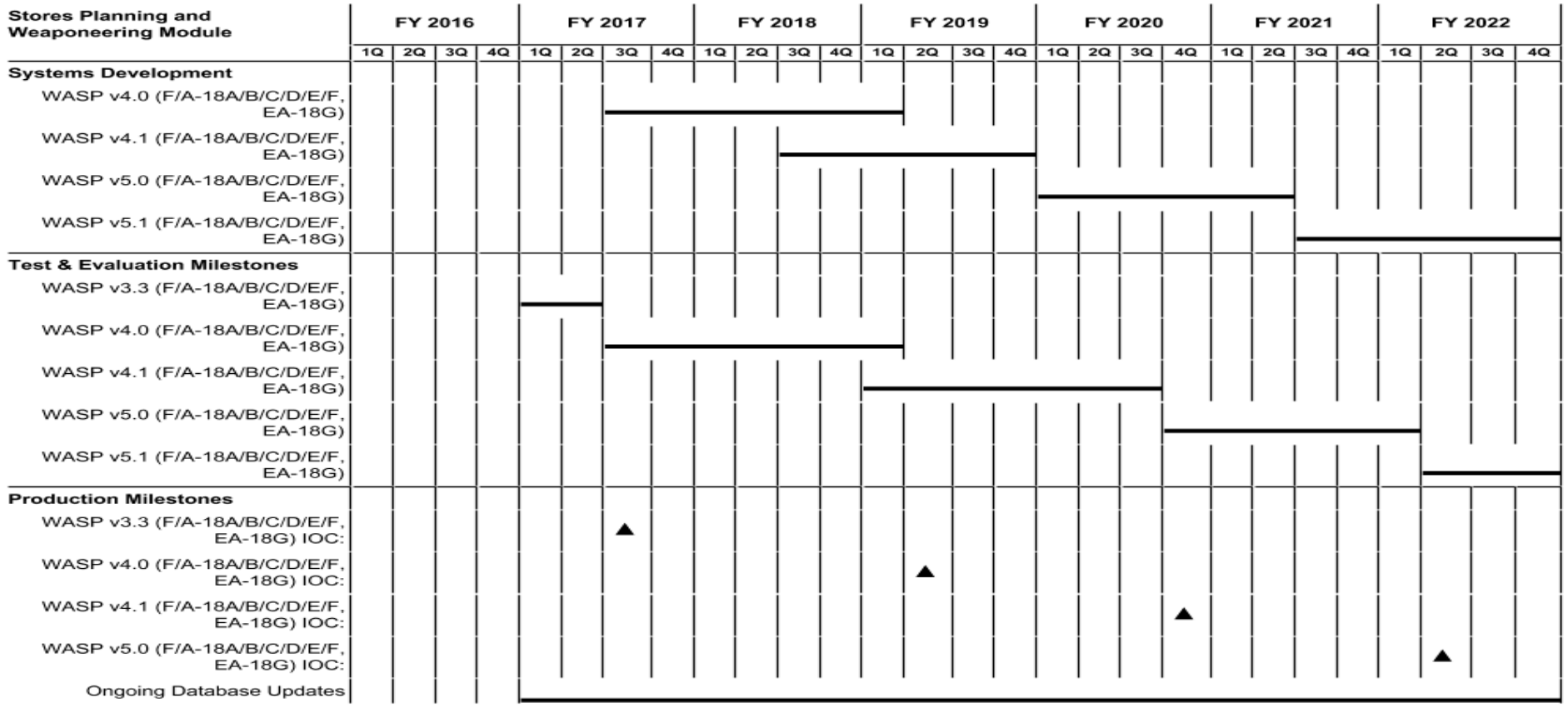
The FY18 Program Management Support contract will be a competitive March 2017 award so the performing activity and location are currently TBD due to the competitive contracting strategy. This contract consists of a base year (FY17) and future option years that will affect the current budget year. Once awarded, the performing activity and location will be updated to reflect the selected contractor.

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		11.153		11.185		-		11.185	-	-	-

Remarks

Prior to FY17, PU 2311 was budgeted under PE 0604215N.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2311 / *Stores Planning and Weaponeering Module*



2018OSD - 0605215N - 2311

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2311 / *Stores Planning and Weaponeering Module*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Stores Planning and Weaponeering Module				
Systems Development: WASP v4.0 (F/A-18A/B/C/D/E/F, EA-18G):	3	2017	1	2019
Systems Development: WASP v4.1 (F/A-18A/B/C/D/E/F, EA-18G):	3	2018	4	2019
Systems Development: WASP v5.0 (F/A-18A/B/C/D/E/F, EA-18G):	1	2020	2	2021
Systems Development: WASP v5.1 (F/A-18A/B/C/D/E/F, EA-18G):	3	2021	4	2022
Test & Evaluation Milestones: WASP v3.3 (F/A-18A/B/C/D/E/F, EA-18G):	1	2017	2	2017
Test & Evaluation Milestones: WASP v4.0 (F/A-18A/B/C/D/E/F, EA-18G):	3	2017	1	2019
Test & Evaluation Milestones: WASP v4.1 (F/A-18A/B/C/D/E/F, EA-18G):	1	2019	3	2020
Test & Evaluation Milestones: WASP v5.0 (F/A-18A/B/C/D/E/F, EA-18G):	4	2020	1	2022
Test & Evaluation Milestones: WASP v5.1 (F/A-18A/B/C/D/E/F, EA-18G):	2	2022	4	2022
Production Milestones: WASP v3.3 (F/A-18A/B/C/D/E/F, EA-18G) IOC::	3	2017	3	2017
Production Milestones: WASP v4.0 (F/A-18A/B/C/D/E/F, EA-18G) IOC::	2	2019	2	2019
Production Milestones: WASP v4.1 (F/A-18A/B/C/D/E/F, EA-18G) IOC::	4	2020	4	2020
Production Milestones: WASP v5.0 (F/A-18A/B/C/D/E/F, EA-18G) IOC::	2	2022	2	2022
Production Milestones: Ongoing Database Updates:	1	2017	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605215N / *(U)Mission Planning*	Project (Number/Name) 2312 / *Common Helicopters*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2312: *Common Helicopters*	0.000	0.000	0.638	0.665	-	0.665	0.681	0.695	0.709	0.723	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Prior to FY17, Common Helicopters (PU 2312) was budgeted under Standards Development (PE 0604215N).

A. Mission Description and Budget Item Justification

Automated mission planning systems have focused on developing planning capabilities for fixed-wing aircraft, while the unique planning requirements for helicopters are not yet fully addressed. The unique and enhanced automated mission planning requirements that must be developed and implemented for helicopters include: data loading, an enhanced route editor (serpentine routing, hover), manipulation of higher fidelity (smaller scale) maps and imagery, enhanced performance tools (performance in and out of ground effect, performance degradation due to atmospheric conditions & elevation), and enhanced fidelity of landing zone, target zone, and threat analyses. The following type/model/series aircraft are supported by this PU: AH-1W/Z, UH-1N/Y, H-46/E, H-53D/E, H-60H/R/S and V-22. Common helicopter functionality will be developed for implementation in Joint Mission Planning System (JMPS).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development	0.000	0.638	0.400	0.000	0.400
Articles:	-	-	-	-	-
Description: Development of Common Helicopter functionality and integration with JMPS Framework Versions 1.5.x and 64-bit Operating System. Common Components include Common Mission Data Loader (CMDL), Weapon Employment Zone Overlays Tool (WEZOT) and Point Selection Tool (PST).					
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Continue the development of Common Mission Data Loader (CMDL), Point Selection Tool (PST), and Weapon Employment Zone Overlays Tool (WEZOT).					
FY 2018 Base Plans: Continue the development of Common Mission Data Loader (CMDL), Point Selection Tool (PST), and Weapon Employment Zone Overlays Tool (WEZOT).					
FY 2018 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605215N / *(U)Mission Planning*	**Project (Number/Name)** 2312 / *Common Helicopters*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Title: Test and Evaluation	0.000	0.000	0.265	0.000	0.265
Articles:	-	-	-	-	-
Description: Integration and test of Common Helicopter functionality with JMPS Framework Versions 1.5.x and 64-bit Operating System. Common Components include Common Mission Data Loader (CMDL), Weapon Employment Zone Overlays Tool (WEZOT) and Point Selection Tool (PST). ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Provide integration and test support for Common Mission Data Loader (CMDL), Point Selection Tool (PST), and Weapon Employment Zone Overlays Tool (WEZOT) for the 64-bit transition to JMPS framework 1.5.x. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.638	0.665	0.000	0.665

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Not applicable.

E. Performance Metrics

Export Mission Data to Data Transfer Device: Threshold value is < 12 minutes to transfer navigation, communication, weapon system initialization settings and intelligence data. Interoperability: Threshold value is 100% of top level Information Exchange Requirements (IERs) designated critical will be satisfied. Objective value is 100% of top level IERs will be satisfied.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605217N *I (U)Common Avionics*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	54.599	58.163	-	58.163	62.003	65.269	64.810	65.918	Continuing	Continuing
0572: *JT Service/NV Std Avionics CP/SB*	0.000	0.000	54.599	53.512	-	53.512	55.653	56.769	56.510	57.618	Continuing	Continuing
3425: *Digital Warfare Office (DWO) MBE&DT Development*	0.000	0.000	0.000	4.651	-	4.651	6.350	8.500	8.300	8.300	Continuing	Continuing

Note

(U) Common Avionics schedule FY16 and prior is reflected in PE 0604215N, Project Unit 0572.

A. Mission Description and Budget Item Justification

This project provides for the identification, study, design, development, demonstration, test, evaluation, and qualification of standard avionics capabilities for Navy use, and wherever practicable, use across all Services and Foreign Military Sales. Such air combat electronics developments include communications and airborne networking, navigation and sensors, flight avionics, safety systems, and flight mission information systems for both forward fit and retrofit aircraft. These efforts continue to maintain federated systems while encouraging transition of procurements to support a modular system for enhanced performance and affordability. Consideration is given up front to reduce acquisition costs through larger procurement quantities that satisfy multi-aircraft customer requirements and that reduce life cycle costs in the areas of reliability, maintainability, and training.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	51.599	63.898	-	63.898
Current President's Budget	0.000	54.599	58.163	-	58.163
Total Adjustments	0.000	3.000	-5.735	-	-5.735
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	3.000	-5.350	-	-5.350

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*		R-1 Program Element (Number/Name) PE 0605217N *I (U)Common Avionics*			
• Rate/Misc Adjustments	0.000	0.000	-0.385	-	-0.385

Change Summary Explanation

Technical: Not applicable.

Schedule:

Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM): CH-53K Integration and Certification efforts extended until 4Q/19 to align with platform schedule.

Tactical Communications: Change in Joint Interoperability Test Command/National Security Agency Certification processes caused adjustments to schedule. Shifted Crypto Modernization (Suite B) from 1Q/19 to 1Q/18 and added Transmission Security (TRANSEC) due to mandated NSA Crypto Modernization initiatives.

Ground Proximity Warning System/Terrain Awareness System (GPWS/TAWS II): Renamed V-22 CFIT Study CA to V-22 Integration Study (Contract Award). Continued V-22 TAWS II S/W Dev into 2Q/22.

Collaborative Warfare (CW): Name change from JCIDS Strategy to Naval Aviation Netted Sensors and Maritime Targeting Experimentation. Name change from Naval Aviation Tactical Networking Requirements to Naval Aviation and Maritime Targeting Requirements. Added Capability for Common Radio Enhancement (CoRE) to better align with N2/N6 and ONR.

Mid Air Collision Avoidance Capability: Replan FY17-FY22 due to FY18 reduction. Shifted MDD/ASR from 1Q/17 to 2Q/18; Added RFP Release Decision per DOD 5000.02 requirements; Shifted ILA from 1Q/18 to 3Q/19; Shifted Milestone B from 2Q/18 to 4Q/19; Added Specification Development and Risk Reduction for Prototyping of Algorithms and SW (1Q/17-3Q/17) to clarify support of CDD approval efforts; Added Phase 2 Spec Development (1Q/18-1Q/19); Added Phase 2 Risk Reduction for Prototyping of Algorithms and SW (1Q/18-3Q/19); Shifted SRB/SRR from 2Q/17 to 1Q/19; Shifted SFR from 3Q/17 to 2Q/19; Shifted PDR from 1Q/18 to 3Q/19; Shifted Software Design and Development from 2Q/18-1Q/21 to 1Q/20-4Q/22; Shifted CDR from 3Q/19 to 3Q/20; Shifted Platform Integration from 3Q/19-4Q/21 to 3Q/21-4Q/22; Shifted Test and Evaluation MH-60 R/S from 3Q/21-4Q/21 to 3Q/22-4Q/22; Added TRR 3Q/22.

(U) Common Avionics schedule FY16 and prior is reflected in PE 0604215N, Project Unit 0572.

3425: The Digital Warfare Office stood up separately within Program Element to set requirements, prioritize resources, and lead efforts on information interoperability and human/machine teaming starting 1QTR FY18 through the FYDP.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605217N / *(U)Common Avionics*	Project (Number/Name) 0572 / *JT Service/NV Std Avionics CP/SB*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0572: *JT Service/NV Std Avionics CP/SB*	0.000	0.000	54.599	53.512	-	53.512	55.653	56.769	56.510	57.618	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

(U) Common Avionics schedule FY16 and prior is reflected in PE 0604215N, Project Unit 0572.

A. Mission Description and Budget Item Justification

Joint Services/Navy Standard Avionics Components and Subsystems: This project provides for the identification, study, design, development, demonstration, test, evaluation, and qualification of standard avionics capabilities for Navy use, and wherever practicable, use across all Services and Foreign Military Sales. Standard avionics capabilities under
development include the Joint Service Review Committee for Avionics Standardization (JSRC-AS), Communication Navigation Surveillance/Air Traffic Management (CNS/ATM), Tactical Communications (TACCOM), Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II), Collaborative Warfare (CW), Avionics Component Improvement Program (AvCIP), Mid Air Collision Avoidance Capability (MCAC), and Avionics Architectures Team (AAT). Participation in Human Factors Quality Management Board ensures Navy safety upgrades and mandatory safety improvements for naval aircraft.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Joint Service Review Committee for Avionics Standardization (JSRC-AS)	0.000	0.974	0.995	0.000	0.995
Articles:	-	-	-	-	-
Description: The JSRC-AS program supports Congressional and Assistant Secretary of the Navy for Research, Development and Acquisition direction to control the growing proliferation of unique avionics and improve coordination among the services through the identification, development, and promotion of investigative and development efforts across the services and U.S. Coast Guard. The JSRC-AS supports the development, analysis and review of new avionics requirements with potential for joint service application. The JSRC-AS consists of an O-6 Level principal from each service and U.S. Coast Guard, as well as the appropriate staff, to support joint service working group efforts. The JSRC-AS reports to the O-7 level tri-service Aviation Common Systems Board who reports to the O-9 level Joint Aeronautical Commanders Group.					
FY 2016 Accomplishments: N/A					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Provide leadership in support of the Navy's interest to the Joint Services Review Committee for Avionics Standardization (JSRC-AS) tri-service committee promoting commonality and joint programs with focus on interoperability, communications, navigation, Joint Services avionics obsolescence management, and update of the Core Avionics Master Plan. ***FY 2018 Base Plans:*** Provide leadership in support of the Navy's interest to the Joint Services Review Committee for Avionics Standardization (JSRC-AS) tri-service committee promoting commonality and joint programs with focus on interoperability, communications, navigation, Joint Services avionics obsolescence management, and update of the Core Avionics Master Plan. ***FY 2018 OCO Plans:*** N/A					
Title: Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) ***Articles:*** ***Description:*** This program will conduct and support CNS/ATM research, studies, development, integration, demonstration, test and evaluation efforts for Naval aviation platforms in development. Platform integration of Mode Select (S), 8.33 kHz, Reduced Vertical Separation Minimum (RVSM), Required Navigation Performance Area Navigation (RNP/RNAV) to include M Code, and Automatic Dependent Surveillance-Broadcast Out (ADS-BO) functional integration and certification efforts into Naval aircraft. Assist with insertion of communication, navigation, surveillance, and supporting technologies and conduct capability certification on developmental platforms such as F-35, CH-53K, and Unmanned Air Systems. Capabilities include Mode S, 8.33 kHz, RVSM, RNP/RNAV, ADS-BO, and other civil and military capabilities. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Assist with insertion and integration of CNS/ATM technologies and certification of developmental platforms. Evaluate technologies and develop solutions to support platform integrations. Develop CNS/ATM Common Components to support RNP RNAV developmental platform requirements. Continue integration/certification of Mode Select, 8.33 kHz, RVSM, RNP/RNAV, and ADS-BO into CH-53K. Research and develop Global Positioning System (GPS) enhancements to support CNS/ATM RNP RNAV improvements. Research and	0.000 -	2.812 -	2.952 -	0.000 -	2.952 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
develop ADS-BO System Design Assurance requirements as well as compatibility with the emerging GPS M Code and its impact on RNP RNAV. ***FY 2018 Base Plans:*** Assist with insertion and integration of CNS/ATM technologies and certification of developmental platforms. Evaluate technologies and develop solutions to support platform integrations. Develop CNS/ATM Common Components to support Required Navigation Performance Area Navigation (RNP RNAV) developmental platform requirements. Continue integration/certification of Mode Select, 8.33 kHz, Reduced Vertical Separation Minimum (RVSM), RNP/RNAV, and Automatic Dependent Surveillance-Broadcast Out (ADS-BO) into CH-53K. Research and develop Global Positioning System (GPS) enhancements to support Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) RNP RNAV improvements. Research and develop (ADS-BO) System Design Assurance requirements as well as compatibility with the emerging Global Positioning System (GPS) M Code and its impact on RNP RNAV. ***FY 2018 OCO Plans:*** N/A					
Title: Tactical Communications (TACCOM) ***Articles:*** ***Description:*** This program will conduct research, studies, development, integration, demonstration, test and evaluation efforts to ensure tactical communication systems and capabilities are developed and available to support naval aviation requirements. Perform tactical communication platform integration studies and activities to determine technical and cost effective solutions across naval aviation. Develop tactical communications (voice/data) requirements, concepts and systems which have application across naval aviation. Support all necessary tasks to ensure evolution of legacy communications systems incorporating programmable Communication Security/Information Assurance, Transmission Security (TRANSEC) mandated National Security Agency (NSA) Crypto Modernization initiatives, Tactical Secure Voice (TSV) Suite B, Combat Net Radio (CNR) Variable Message Format (VMF), Beyond Line-of-Sight, Satellite Communication (SATCOM) Modernization including Mobile User Objective System (MUOS), High Frequency, Second Generation Anti-Jam Tactical UHF Radio for NATO (SATURN) civil interoperability, and data link into the ARC-210 system. Support for networking requirements development and prototyping, Integrated Waveform (IW), Intelligence Broadcast System over modern Code Division Multiple Access based satellite channels, Tactical Networks, Data Links, and Link 16. ***FY 2016 Accomplishments:***	0.000 -	20.311 -	19.777 -	0.000 -	19.777 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** Continue development of SATCOM Software (S/W) Development with MUOS capabilities. Continue Operational Flight Plan (OFP) S/W integration. Submit Apollo crypto engine integration for Legacy NSA and Information Assurance (IA) certification. Develop Combat Net radio interoperability with Second-Generation Anti-Jam Tactical Ultra High Frequency (UHF) Radio for NATO (SATURN) waveform. ***FY 2018 Base Plans:*** Continue Satellite Communication (SATCOM) Software (S/W) development with Mobile User Objective System (MUOS) capabilities. Continue Operational Flight Plan (OFP) S/W integration. Submit Apollo crypto engine integration for Legacy NSA and Information Assurance (IA) certification. Develop Combat Net radio interoperability with Second-Generation Anti-Jam Tactical Ultra High Frequency (UHF) Radio for NATO (SATURN) waveform. Develop red-side provisioning options for the RT-2036. Develop Transmission Security (TRANSEC) SATCOM Crypto Modernization in accordance with NSA directives and Tactical Secure Voice(TSV)Suite B for interoperability. ***FY 2018 OCO Plans:*** N/A					
Title: Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II) ***Articles:*** ***Description:*** This program will conduct research, studies, development, integration, demonstration, test and evaluation efforts to meet naval aviation GPWS/TAWS II requirements. These requirements span all operational modes and operational environments, to include Degraded Visual Environment. Perform GPWS/TAWS II platform integration studies and activities to determine technical and cost effective solutions across naval aviation. Develop GPWS/TAWS II solutions tailored to platform performance and range of military operations. Develop simulation models for use at Manned Flight Simulator (MFS) or other simulation environments as required for platform tailoring, including procurement of test article hardware. Evaluate aircraft simulation models for suitability in GPWS/TAWS II development effort. Develop GPWS/TAWS II algorithms utilizing simulation environments as real-time hardware and pilot in the loop tool. Develop and evaluate algorithm interfaces necessary for integration of the algorithm within platform host computer. Develop software code to execute GPWS/TAWS II algorithm in host platforms. ***FY 2016 Accomplishments:***	0.000 -	7.834 -	8.668 -	0.000 -	8.668 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** Develop and deliver the second formal software build of TAWS II system to H-60. Continue Phase I & II Developmental Testing (DT) in MH-60R/S. ***FY 2018 Base Plans:*** Complete Phase II DT on MH-60R/S. Conduct Milestone C and Fleet Release of TAWS II on MH-60R/S. Conduct V-22 TAWS II requirements development efforts. ***FY 2018 OCO Plans:*** N/A					
Title: Collaborative Warfare (CW) ***Articles:***	0.000 -	0.219 -	0.240 -	0.000 -	0.240 -
Description: The Collaborative Warfare (CW) component is a Research & Development effort to identify targeting gaps and determine the warfighting benefit of integrating networked capabilities into naval aircraft to fill those gaps. The CW component also addresses maritime targeting gaps for naval aircraft to operate more effectively with other military services. The following efforts are included: 1) Comprehensive naval aviation and maritime targeting requirements that map fleet gaps and requirements to cross-platform naval aviation solutions. 2) Netted sensors and maritime targeting capability proof of concept prototype demonstrations leveraging the Navy's Fleet Experimentation campaign. 3) Coordinating Naval Aviation requirements with the Office of Naval Research Future Naval Capability Enabling Capability for the Common Radio Enhancement (CoRE). 4) Coordination of Naval Aviation strategy with Intelligence Community (IC) efforts in the areas of High Side Data Fusion, Combat Systems Integration, and National to Tactical Integration. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Continue executing tactical networking strategy activities to define future Program Objective Memorandums and analytic agendas. Develop requirements, standards, and architectures in support of new and updated netted-sensors' Concept of Operations and capabilities. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue executing to Naval Aviation and Maritime Targeting Experimentation and Requirements. Develop requirements, standards, and architectures in support of new and updated netted-sensors' Concept of Operations and capabilities. ***FY 2018 OCO Plans:*** N/A					
Title: Avionics Component Improvement Program (AvCIP)	0.000	4.692	4.572	0.000	4.572
Articles:	-	-	-	-	-
Description: Investigate high value Return On Investment component improvement candidate projects in support of NAVAIR Commander's third focus area - Improve "capital A" Affordability. Stop operating and sustainment cost growth by reducing costs for fielded systems and implementing life-cycle cost reduction initiatives as part of new systems development. This program positions resources for next year application to fast-track corrections to existing problematic systems. Projects address critical readiness issues (significant back-orders or impending sustainability failures that threaten to down aircraft), functional performance obsolescence issues (system failing to support mission requirement), and top sustainment cost drivers (out of proportion annual maintenance or repair costs). Resources enable design and development of technology insertion and product redesign or replacement to meet readiness goals, meet mission objectives, or reduce overall sustainment costs. Candidate projects are submitted via a rigorous template, reviewed by a panel of Avionics professionals, and selected based upon urgency, warfighting contributions, breadth of application and scope of Return On Investment. Resources cover non-recurring engineering elements (including design and development, prototypes, platform integration, test and evaluation), program management and associated logistics elements (including technical data preparation, support equipment, provisioning, and training). Analysis shows that funding applied under this program between 2006 and 2016 will enable sustainment and procurement cost avoidances exceeding a five to one margin by 2025.					
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** Address current fleet problem avionics systems (top readiness degraders, cost drivers, obsolescence-driven sustainability, capability loss, fleet head-hurters). ***FY 2018 Base Plans:*** Address current fleet problem avionics systems (top readiness degraders, cost drivers, obsolescence-driven sustainability, capability loss, fleet head-hurters). ***FY 2018 OCO Plans:*** N/A					
Title: Mid Air Collision Avoidance Capability (MCAC) ***Articles:*** ***Description:*** This program will conduct research, studies, and development, integration, demonstration, test and evaluation efforts to meet Naval Aviation MCAC requirements. These requirements span all operational modes and operational environments, to include Degraded Visual Environment. Perform MCAC platform integration studies and activities to determine technical and cost effective solutions across Naval Aviation. Develop MCAC solutions tailored to platform performance and range of military operations. Develop simulation models for use at Manned Flight Simulator (MFS) or other simulation environments as required for platform tailoring, including procurement of test article hardware. Evaluate aircraft simulation models for suitability in MCAC development effort. Develop MCAC solutions utilizing simulation environments as real-time hardware and pilot in the loop tools. Develop and evaluate interfaces necessary for integration of MCAC within platform host environment. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:***	0.000 -	3.550 -	2.108 -	0.000 -	2.108 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Finalize and approve Capability Development Document (CDD). Specification development and Risk Reduction for Prototyping of Algorithms & Software (phase 1) supports and clarifies the existing requirement of CDD approval efforts. ***FY 2018 Base Plans:*** Continue Specification Development and Risk Reduction Prototyping to evaluate Mid Air Collision Avoidance Capability (MCAC) algorithms and software. Conduct Material Development Decision/Acquisition Strategy Review (MDD/ASR). Prepare for Specification Review Boards (SRB) /System Readiness Review (SRR) and System Functional Review (SFR). ***FY 2018 OCO Plans:*** N/A					
Title: Avionics Architectures Team (AAT) ***Articles:*** ***Description:*** The Avionics Architecture Team (AAT) provides hardware and software (HW/SW) standards and product line development and management for common HW/SW operating environments to establish testable open architecture requirements in accordance with National Defense Authorization Act (NDAA) Section 801 Open Architecture language, DoD Directive 5000.1, N6/N7 Naval Open Architecture Requirements Letter 9010, Ser. N6N7/5U916276, and SECNAVINST 5000.2E. The Future Airborne Capability Environment (FACE) Technical Standard is developed through Navy, Army, Air Force, Industry and Academia collaboration in accordance with Public Law 104-113. The Hardware Open Systems Technologies (HOST) standard is being developed through government and academia collaboration and will be provided to industry for prototyping efforts. The Functional Architecture for Strategic Reuse (FASTR) initiative will define a standard process for mission level capability decomposition to support product line development and management. The AAT provides Subject Matter Experts to define and architect a set of Open Architecture Standards and product lines, design principles and guidance, development and integration tools, acquisition strategy, contracting guidance and cost estimates. The results will enable Department of Defense (DoD) weapons systems to systematically procure open, modular and reconfigurable software architectures, reuse HW/SW and deliver scalable, portable and interoperable war fighting capabilities at a faster rate, reducing redundant development costs and increasing competition. Infrastructure components and frameworks built to these standards will support Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) capability upgrades on various platforms by enabling integration of common, non-proprietary applications. The AAT initiatives enable the government's role as Lead Systems Integrator, per the Weapons System Acquisition Reform Act (WSARA) 2009, and cost effectively manage data rights for reuse across the DoD.	0.000 -	14.207 -	14.200 -	0.000 -	14.200 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: N/A ***FY 2017 Plans:*** Provide development support, mission based engineering, systems engineering and program management for design and acquisition strategy implementation guidance. Develop conformance tools for Edition 3.0 of the Future Airborne Capability Environment (FACE) Technical Standard and incorporate revisions to the standard based on issues identified by government and industry consortium. Research new hardware technologies and develop Tier 2 Hardware Open Systems Technologies (HOST) specifications to support widely adopted commercial technologies and platform requirements. Assist platforms with strategies for modular functional architectures and implementation of FACE and HOST standards. Subject Matter Expert support for platform integration and competitive source selection. Academia prototyping and demonstration efforts for FACE, Functional Architecture for Strategic Reuse (FASTR) and HOST initiatives. ***FY 2018 Base Plans:*** Provide development support, mission based engineering, systems engineering and program management for design and acquisition strategy implementation guidance. Generate revisions for future editions of the FACE Technical Standard based on issues identified by government and industry consortium and develop corresponding conformance tools. Research new hardware technologies and develop Tier 2 HOST specifications to support widely adopted commercial technologies and platform requirements. Provide input to platforms developing Tier 3 HOST specifications. Assist platforms with strategies for modular functional architectures and implementation of FACE and HOST standards. Participate in international collaboration efforts to define comprehensive open architecture strategy. Generate alignment strategies for a comprehensive open architecture approach between Navy, Army and Air Force. Support the implementation of Naval Aviation's data model strategy. Provide subject Matter Expert support for platform integration and competitive source selection. Academia prototyping and demonstration efforts for FACE, FASTR and HOST initiatives. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	54.599	53.512	0.000	53.512

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0577: *Common Avionics Changes*	154.588	164.839	123.507	-	123.507	150.881	109.444	132.203	114.976	353.447	3,611.398

Remarks

D. Acquisition Strategy

Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) program is a system of systems. The program will encompass the integration of various systems which will be procured utilizing existing contracts for integration on forward-fit and retrofit platforms to provide CNS/ATM functionality. Tactical Communications (TACCOM) is utilizing a firm fixed price contract to Rockwell Collins for research and development of the ARC-210 Gen 5/6 and other Navy contract vehicles for integration studies. The Navy will integrate systems and components to satisfy platform requirements to achieve tactical communication capability as determined by analyses. Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II) Software Modules will be developed by a Government Software Product Team in collaboration with Industry where required. Avionics Component Improvement Program (AvCIP) will annually review, compete and select candidate component improvement proposals according to urgency, criticality of warfighting contributions, technical risk, breadth of application, and scope of Return On Investment (ROI). Projects are selected by a panel of Avionics management experts, including representatives from OPNAV N98, NAVAIR, NAVICP, and the Fleet. Projects are executed by managers in platform or commodity offices that own the component. The AvCIP program management team manages project selection, allocates funds, monitors multiple project executions against proposed spend plans, and tracks solution performance and achievement of projected ROIs over time using Fleet maintenance and component performance databases. Cost avoidances are coordinated with OPNAV N98 to balance Flying Hour Program costs. Component improvement solutions include modular hardware, software and material upgrades. Resources cover engineering elements (including design and development, prototypes, platform integration, test and evaluation), program management and associated logistics elements (including technical data preparation, support equipment, provisioning, and training). Mid Air Collision Avoidance Capability (MCAC) is the capability umbrella which encompasses all systems designed and developed which aid in air-to-air collision avoidance. Systems include but are not limited to Traffic Collision Avoidance Systems and Mid Air Collision Avoidance Systems. MCAC Software Modules will be developed by a Government Software Product Team in collaboration with Industry where required. Avionics Architectures Team (AAT) will provide acquisition strategy guidance and support to platforms implementing open systems architectures to address open architecture requirements.

E. Performance Metrics

Joint Service Review Committee for Avionics (JSRC-AS) - Provide leadership in support of the Navy's interest to the JSRC tri-service committee promoting commonality and joint programs with focus on interoperability, communications, Communication Navigation Surveillance/Air Traffic Management (CNS/ATM), Joint Services avionics obsolescence
management and the update of the Core Avionics Master Plan. Support and participate in Naval Aviation Requirements Group panels, Operational Advisory Group, and Human Factors Quality Management Board.
Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM) - Successfully complete platform integration, test, and certifications.
Tactical Communications (TACCOM) - Achieve Joint Interoperability Test Command and National Security Agency certifications on system developmental efforts to meet operational requirements.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

Ground Proximity Warning System/Terrain Awareness Warning System (GPWS/TAWS II) - Develop algorithm and software to meet platform specific requirements, successfully complete flight test, and deliver product on schedule. Successfully complete Milestone B, Milestone C, and Fleet Release.
Collaborative Warfare (CW) - Identify collaborative warfighting capability gaps and ensure the development of the most intelligent, cost effective, and timely solutions to fill those gaps.
Avionics Component Improvement Program (AvCIP) - Successful project competition and selection, execution of allocated funds, fielding of solutions, and documentation of component performance enhancement and benefits.
Mid Air Collision Avoidance Capability (MCAC) - Achieve program acquisition milestones on cost and schedule meeting platform requirements.
Avionics Architectures Team (AAT) - Provide leadership in support of the Navy's interest to the Future Airborne Capability Environment (FACE) Consortium. Participate in technical and business working groups within the FACE Consortium to foster solutions that promote interoperable and integrated warfighting capability for all services. Successfully functionally decompose,prototype and demonstrate FACE conformant applications and FACE compatible operating environments. Develop technical specifications for Hardware Open System Technologies (HOST). Prototype and demonstrate HOST avionics components.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Dev CNS/ATM	SS/CPFF	Sikorsky : Stratford, CT	0.000	0.000		1.792	May 2017	1.750	Mar 2018	-		1.750	0.000	3.542	3.542
Primary Hardware Dev	Various	NAWCAD : Patuxent River, MD	0.000	0.000		1.421	Mar 2017	1.375	Nov 2017	-		1.375	Continuing	Continuing	Continuing
Primary Hardware Dev	Various	Various : Various	0.000	0.000		4.907	Mar 2017	4.031	Jan 2018	-		4.031	Continuing	Continuing	Continuing
Aircraft Integration TACCOM	SS/FFP	Rockwell Collins : Cedar Rapids, IA	0.000	0.000		4.875	Nov 2016	8.453	Mar 2018	-		8.453	0.000	13.328	13.134
Aircraft Integration GPWS/ TAWS II	SS/CPIF	Lockheed Martin : Owego, NY	0.000	0.000		4.937	May 2017	4.087	Feb 2018	-		4.087	0.000	9.024	9.024
Systems Engineering AAT	MIPR	DTIC : Fort Belvior, VA	0.000	0.000		8.811	Jan 2017	9.130	Jan 2018	-		9.130	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.530	Mar 2017	1.934	Nov 2017	-		1.934	Continuing	Continuing	Continuing
Systems Engineering	Various	Various : Various	0.000	0.000		1.197	Mar 2017	0.970	Jan 2018	-		0.970	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		29.470		31.730		-		31.730	-	-	-

Remarks

TACCOM aircraft integration increase from FY17-FY18 is due to extensive aircraft integration work related with the Crypto Engine Integration efforts.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development TACCOM	SS/FFP	Rockwell : Cedar Rapids, IA	0.000	0.000		6.742	Apr 2017	6.009	Mar 2018	-		6.009	0.000	12.751	12.751
Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.094	Mar 2017	1.060	Nov 2017	-		1.060	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		7.836		7.069		-		7.069	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605217N / *(U)Common Avionics*	Project (Number/Name) 0572 / *JT Service/NV Std Avionics CP/SB*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test and Evaluation	Various	Various : Various	0.000	0.000		2.176	Mar 2017	0.000		-		0.000	0.000	2.176	-
Developmental Test and Evaluation	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		2.033	Nov 2017	-		2.033	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		2.176		2.033		-		2.033	-	-	-

Management Services ($ in Millions)

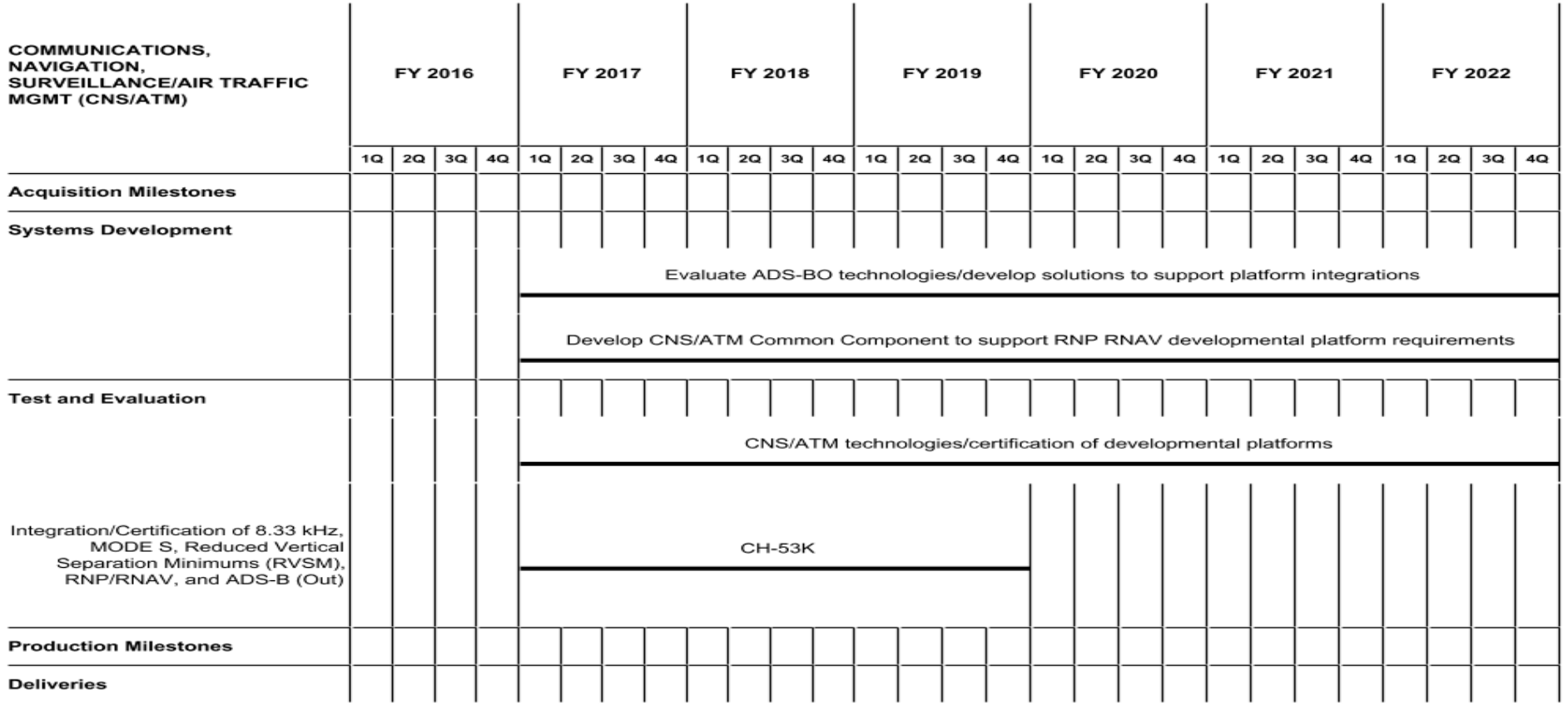
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	Various	Various : Various	0.000	0.000		8.669	Apr 2017	6.255	Jan 2018	-		6.255	Continuing	Continuing	Continuing
Government Engineering Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		3.410	Mar 2017	3.361	Nov 2017	-		3.361	Continuing	Continuing	Continuing
Program Management Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		2.987	Mar 2017	2.220	Nov 2017	-		2.220	Continuing	Continuing	Continuing
Program Management Support	Various	Various : Various	0.000	0.000		0.000		0.794	Jan 2018	-		0.794	Continuing	Continuing	Continuing
Travel	WR	NAVAIR : Patuxent River, MD	0.000	0.000		0.051	Dec 2016	0.050	Feb 2018	-		0.050	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		15.117		12.680		-		12.680	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		54.599		53.512		-		53.512	-	-	-

Remarks

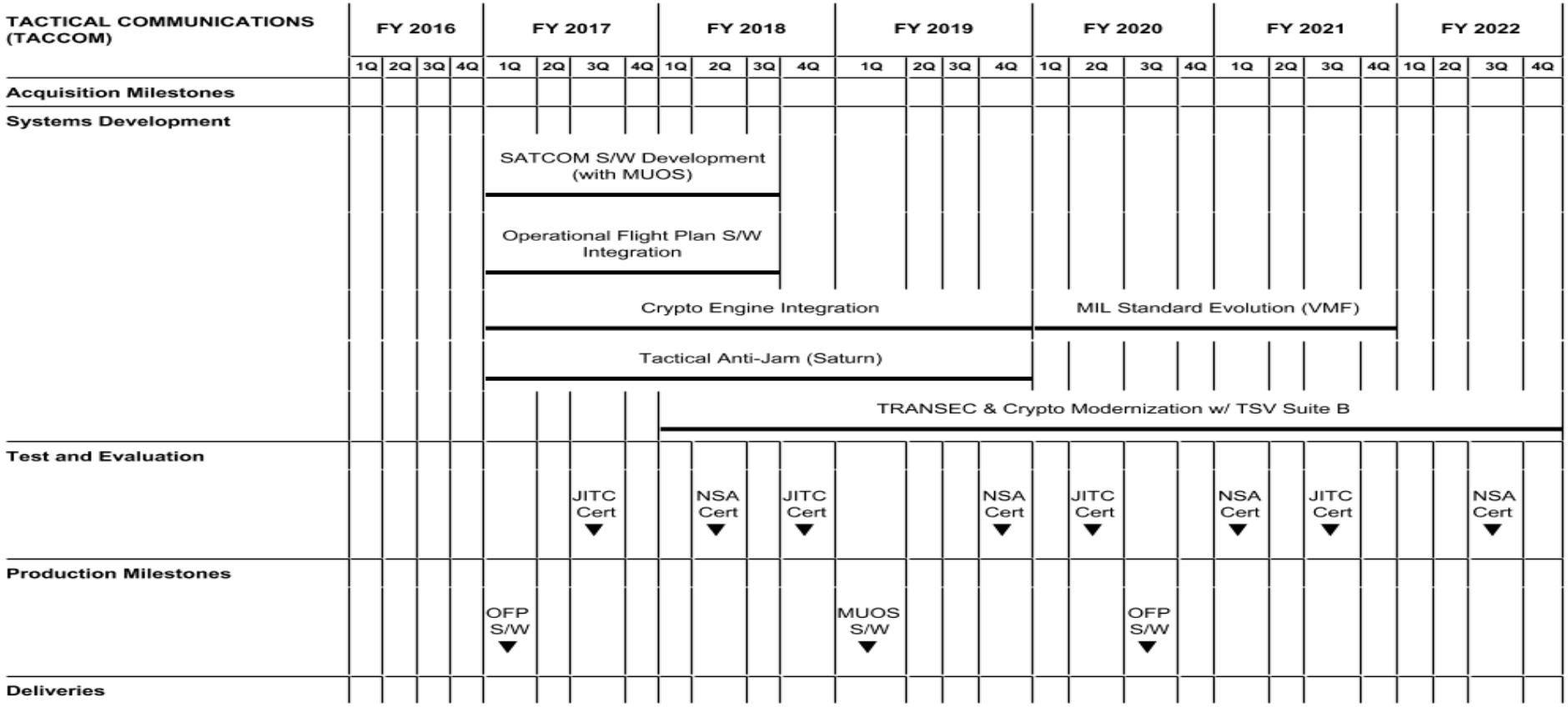
(U) Common Avionics schedule FY16 and prior is reflected in PE 0604215N, Project Unit 0572.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



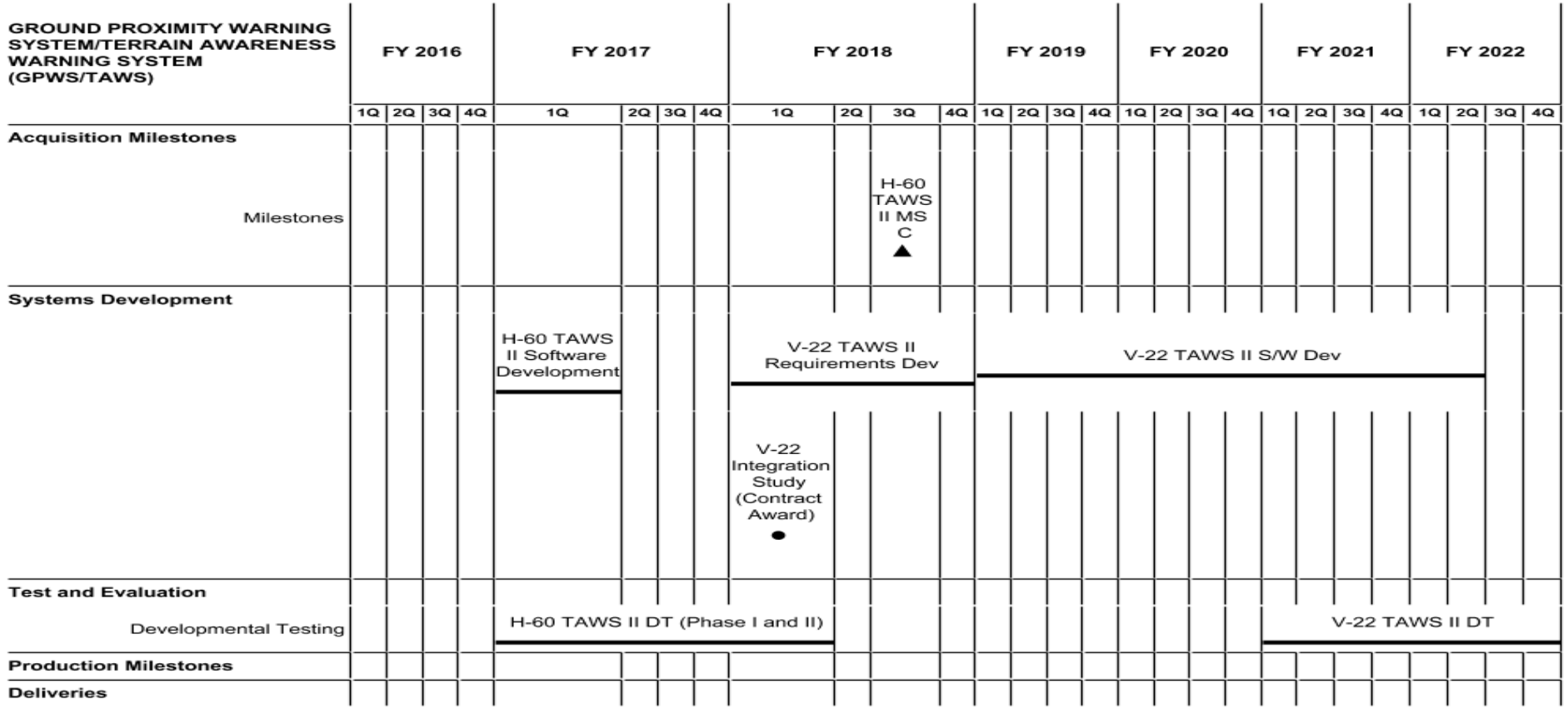
2018PB - 0605217N - 0572

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



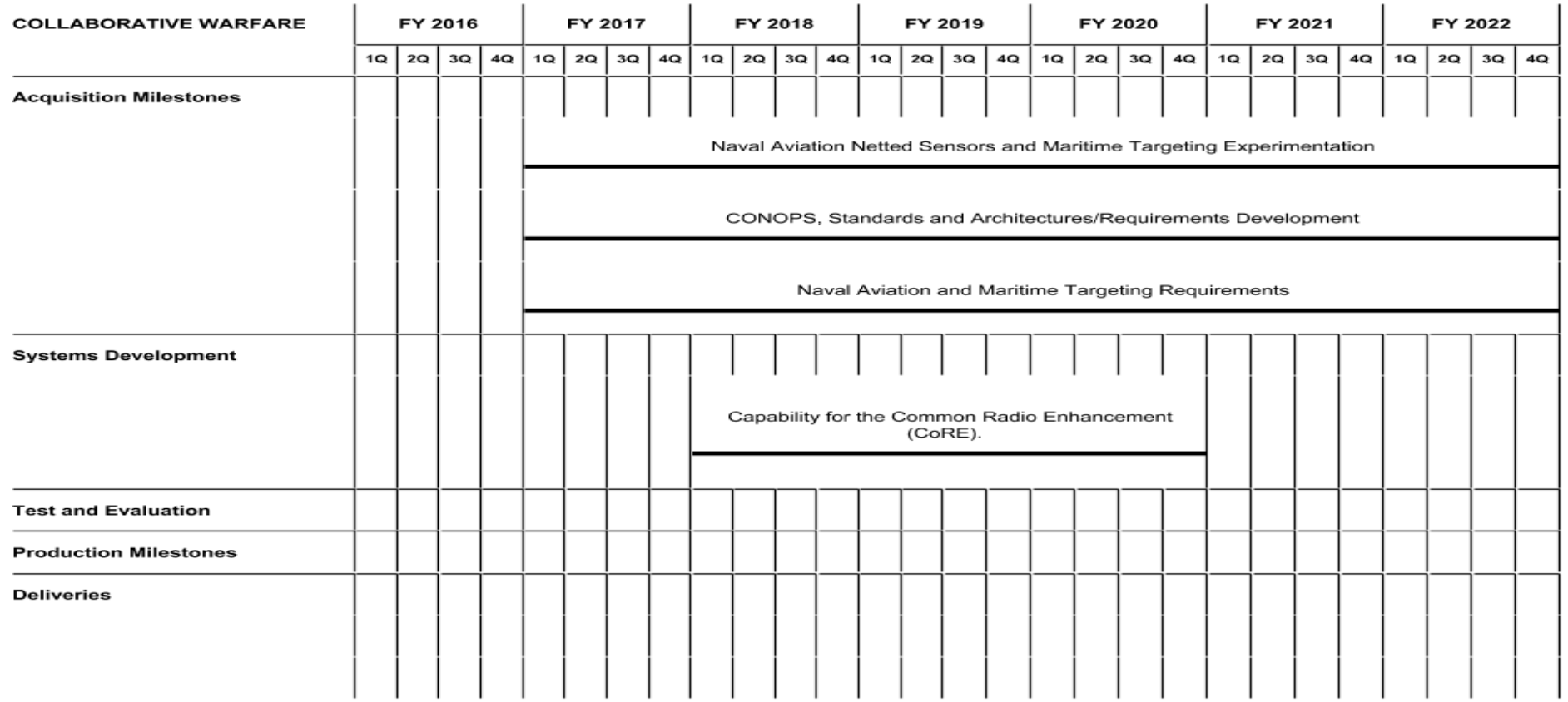
2018PB - 0605217N - 0572

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



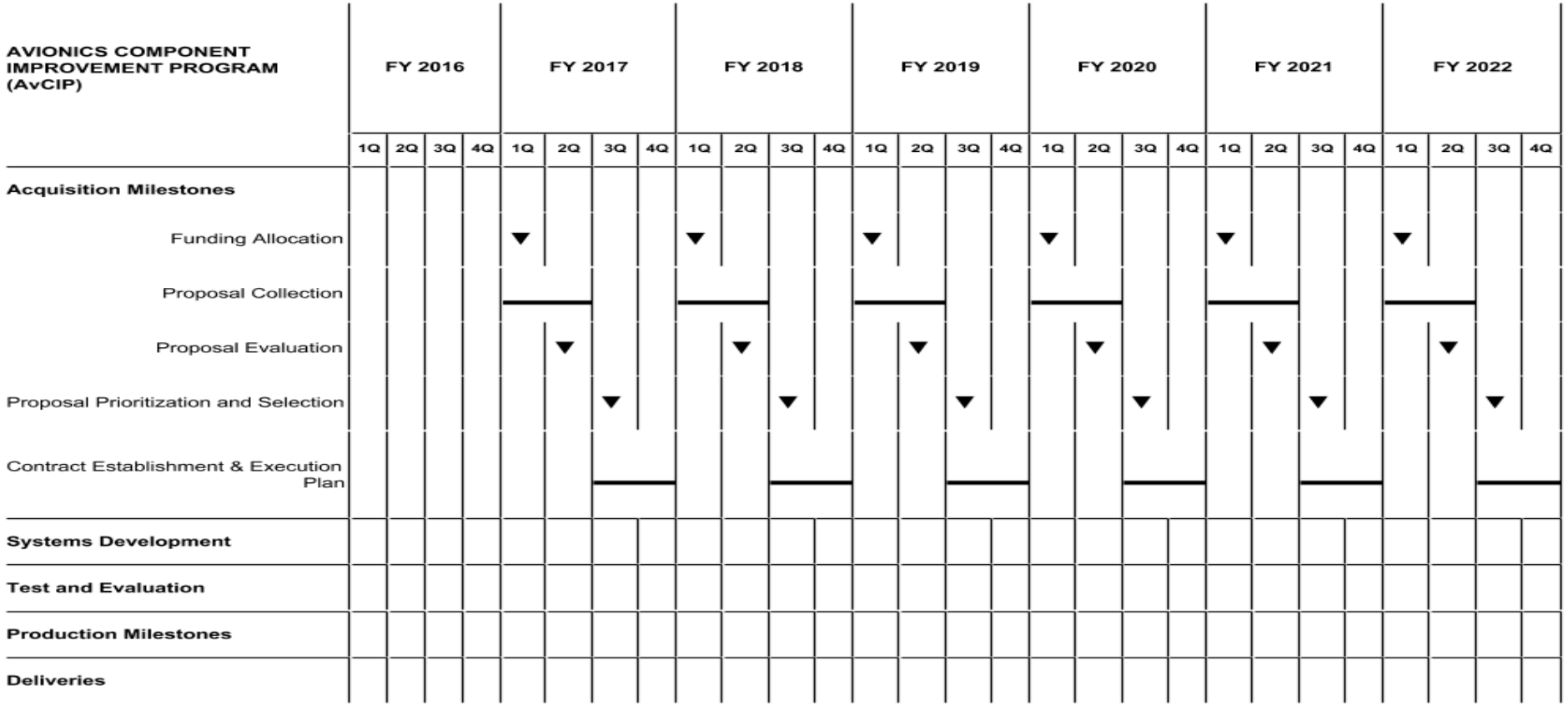
2018PB - 0605217N - 0572

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



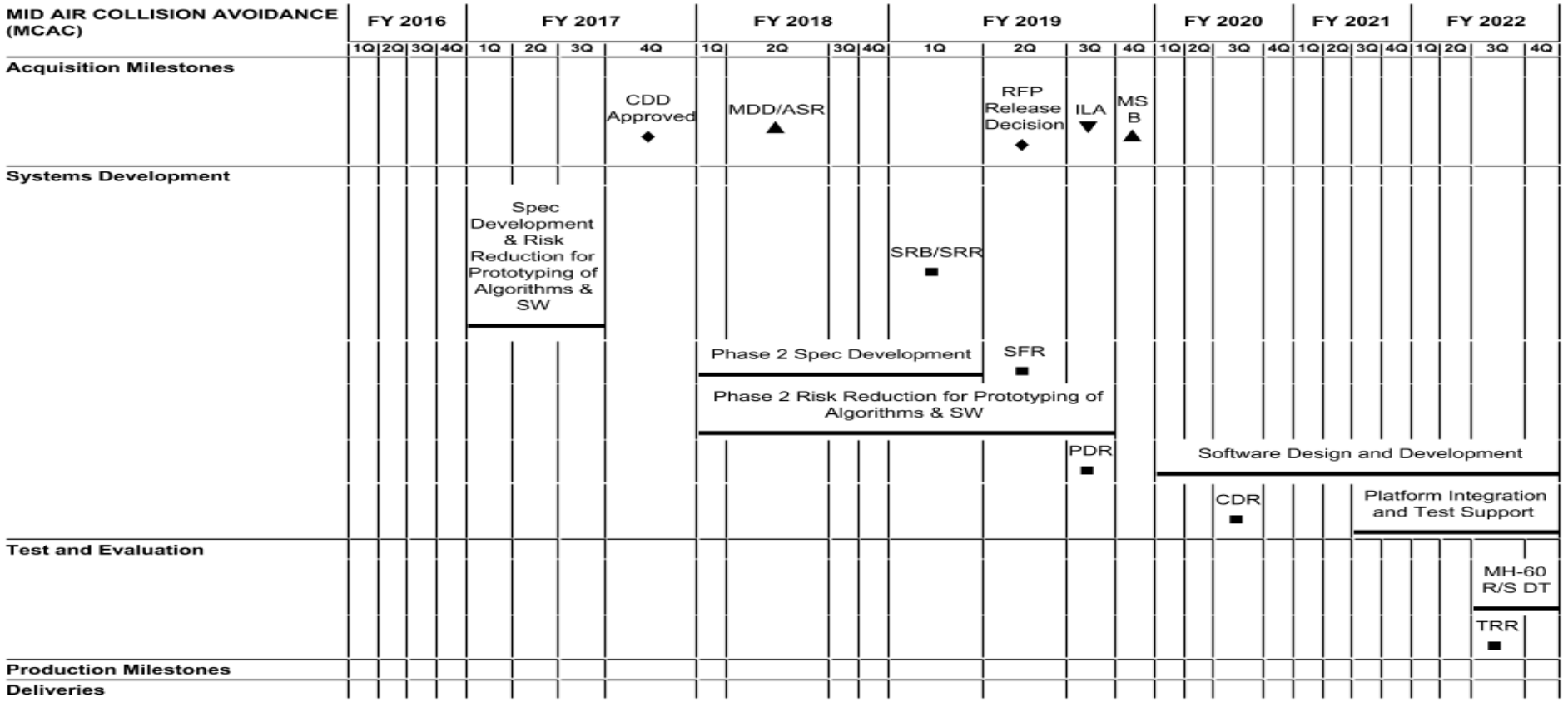
2018PB - 0605217N - 0572

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



2018PB - 0605217N - 0572

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*



2018PB - 0605217N - 0572

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
COMMUNICATIONS, NAVIGATION, SURVEILLANCE/AIR TRAFFIC MGMT (CNS/ ATM)				
Systems Development: Evaluate ADS-BO technologies/develop solutions to support platform integrations	1	2017	4	2022
Systems Development: Develop CNS/ATM Common Component to support RNP RNAV developmental platform requirements	1	2017	4	2022
Test and Evaluation: CNS/ATM technologies/certification of developmental platforms	1	2017	4	2022
Test and Evaluation: Integration/Certification of 8.33 kHz, MODE S, Reduced Vertical Separation Minimums (RVSM), RNP/RNAV, and ADS-B (Out): Integration/Cert 8.33 kHz, MODE S, RVSM, RNP/RNAV, ADS-B Out	1	2017	4	2019
TACTICAL COMMUNICATIONS (TACCOM)				
Systems Development: GEN5 Integrated Waveform Satellite Communications (SATCOM) S/W Development	1	2017	3	2018
Systems Development: Operational Flight Plan	1	2017	3	2018
Systems Development: Crypto Engine Integration	1	2017	4	2019
Systems Development: MIL Standard Evolution (VMF)	1	2020	4	2021
Systems Development: Tactical Anti-Jam (Saturn)	1	2017	4	2019
Systems Development: Transmission Security (TRANSEC) & Crypto Modernization w/ Tactical Secure Voice (TSV) Suite B	1	2018	4	2022
Test and Evaluation: NSA Cert 1	1	2021	1	2021
Test and Evaluation: JITC Cert 1	3	2017	3	2017
Test and Evaluation: NSA Cert 2	2	2018	2	2018
Test and Evaluation: JITC Cert 2	4	2018	4	2018
Test and Evaluation: NSA Cert 3	4	2019	4	2019
Test and Evaluation: JITC Cert 3	2	2020	2	2020

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test and Evaluation: JITC Cert 4	3	2021	3	2021
Test and Evaluation: NSA Cert 4	3	2022	3	2022
Production Milestones: OFP S/W 1	1	2017	1	2017
Production Milestones: MUOS S/W	1	2019	1	2019
Production Milestones: OFP S/W 2	3	2020	3	2020
GROUND PROXIMITY WARNING SYSTEM/TERRAIN AWARENESS WARNING SYSTEM (GPWS/TAWS)				
Acquisition Milestones: Milestones: H-60 TAWS II MS C	3	2018	3	2018
Systems Development: H-60 TAWS II Software Development	1	2017	1	2017
Systems Development: V-22 TAWS II Requirements Development	1	2018	4	2018
Systems Development: V-22 TAWS II Software Development	1	2019	2	2022
Systems Development: V-22 CFIT Integration Study	1	2018	1	2018
Test and Evaluation: Developmental Testing: H-60 TAWS II DT (Phase I and II)	1	2017	1	2018
Test and Evaluation: Developmental Testing: V-22 TAWS II DT	1	2021	4	2022
COLLABORATIVE WARFARE				
Acquisition Milestones: Naval Aviation Netted Sensors and Maritime Targeting Experimentation	1	2017	4	2022
Acquisition Milestones: Netted Sensors CONOPS, Standards and Architectures/ Requirements Development	1	2017	4	2022
Acquisition Milestones: Naval Aviation and Maritime Targeting Requirements	1	2017	4	2022
Systems Development: Capability for the Common Radio Enhancement (CoRE)	1	2018	4	2020
AVIONICS COMPONENT IMPROVEMENT PROGRAM (AvCIP)				
Acquisition Milestones: Funding Allocation: Funding Allocation1	1	2017	1	2017
Acquisition Milestones: Funding Allocation: Funding Allocation2	1	2018	1	2018
Acquisition Milestones: Funding Allocation: Funding Allocation3	1	2019	1	2019
Acquisition Milestones: Funding Allocation: Funding Allocation4	1	2020	1	2020
Acquisition Milestones: Funding Allocation: Funding Allocation5	1	2021	1	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Acquisition Milestones: Funding Allocation: Funding Allocation6	1	2022	1	2022
Acquisition Milestones: Proposal Collection: Proposal Collection1	1	2017	2	2017
Acquisition Milestones: Proposal Collection: Proposal Collection2	1	2018	2	2018
Acquisition Milestones: Proposal Collection: Proposal Collection3	1	2019	2	2019
Acquisition Milestones: Proposal Collection: Proposal Collection4	1	2020	2	2020
Acquisition Milestones: Proposal Collection: Proposal Collection5	1	2021	2	2021
Acquisition Milestones: Proposal Collection: Proposal Collection6	1	2022	2	2022
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation1	2	2017	2	2017
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation2	2	2018	2	2018
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation3	2	2019	2	2019
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation4	2	2020	2	2020
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation5	2	2021	2	2021
Acquisition Milestones: Proposal Evaluation: Proposal Evaluation6	2	2022	2	2022
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection1	3	2017	3	2017
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection2	3	2018	3	2018
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection3	3	2019	3	2019
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection4	3	2020	3	2020
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection5	3	2021	3	2021
Acquisition Milestones: Proposal Prioritization and Selection: Proposal Prioritization and Selection6	3	2022	3	2022
Acquisition Milestones: Contract Establishment & Execution Plan: Contract Establishment & Execution Plan1	3	2017	4	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 0572 / *JT Service/NV Std Avionics CP/SB*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Acquisition Milestones: Contract Establishment & Execution Plan: Contract Establishment & Execution Plan2	3	2018	4	2018
Acquisition Milestones: Contract Establishment & Execution Plan: Contract Establishment & Execution Plan3	3	2019	4	2019
Acquisition Milestones: Contract Establishment & Execution Plan: Contract Establishment & Execution Plan4	3	2020	4	2020
Acquisition Milestones: Contract Establishment & Execution Plan: Conract Establishment & Execution Plan5	3	2021	4	2021
Acquisition Milestones: Contract Establishment & Execution Plan: Conract Establishment & Execution Plan6	3	2022	4	2022
MID AIR COLLISION AVOIDANCE (MCAC)				
Acquisition Milestones: MDD/ASR	2	2018	2	2018
Acquisition Milestones: RFP Release Decision	2	2019	2	2019
Acquisition Milestones: CDD Approved	4	2017	4	2017
Acquisition Milestones: Integrated Logistics Assessment	3	2019	3	2019
Acquisition Milestones: MS B	4	2019	4	2019
Systems Development: Spec Development & Risk Reduction for Prototyping of Algorithms & SW	1	2017	3	2017
Systems Development: SRB/SRR	1	2019	1	2019
Systems Development: Phase 2 Spec Development	1	2018	1	2019
Systems Development: SFR	2	2019	2	2019
Systems Development: Phase 2 Risk Reduction for Prototyping of Algorithms & SW	1	2018	3	2019
Systems Development: PDR	3	2019	3	2019
Systems Development: Software Design and Development	1	2020	4	2022
Systems Development: CDR	3	2020	3	2020
Systems Development: Platform Integration	3	2021	4	2022
Test and Evaluation: MH-60 R/S DT	3	2022	4	2022
Test and Evaluation: TRR	3	2022	3	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605217N / *(U)Common Avionics*	Project (Number/Name) 3425 / *Digital Warfare Office (DWO) MBE&DT Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3425: *Digital Warfare Office (DWO) MBE&DT Development*	0.000	0.000	0.000	4.651	-	4.651	6.350	8.500	8.300	8.300	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Chief of Naval Operations concurred with the Task Force Netted Navy recommendation to stand up the Digital Warfare Office (DWO) to set requirements, prioritize resources, and lead efforts on information interoperability and human/machine teaming.

NAVAIR, NAVSEA, SPAWAR, associated Program Executive Offices, warfare and system centers and University Affiliated Research Centers/Federally Funded Research and Development Centers will support the Model Based Engineering, Technical Design, and Requirements branches in the new DWO under OPNAV N2N6. In order to develop capability from the top down, the DWO will develop requirements for the system of systems to include all of the associated interoperability requirements. Due to the complexity of this work, the DWO will evolve the traditional requirements development methodology to a model based systems engineering environment that will include associated model extensions, reports, views, configuration management, help desk support, and documentation. This work will be completed by a series of teams, each focused on a separate threat domain, and made up of system modelers, fleet representatives, program of record representatives, architecture and interoperability experts, etc. The products generated by these teams will include data technical baselines for domain areas with individual profiles for each program of record, coordinated requirements recommendations, and potential areas for S&T and experimentation to fill gaps. The DWO will also explore emerging digital technologies including human/machine teaming.

Each SYSCOM will be involved in creating Data Technical Baseline (DTB) profiles specific for each program of record. DTBs may consist of interfaces, protocols, content, information quality, architectural aspects, and knowledge base frameworks. SYSCOMs will exercise technical authority to assess Program of Record compliance to DTBs and Key Performance Parameters in support of gate reviews and system engineering technical reviews.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: DIGITAL WARFARE OFFICE	0.000	0.000	4.651	0.000	4.651
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: N/A					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 3425 / *Digital Warfare Office (DWO) MBE&DT Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Provide Subject Matter Expert (SME) support for the domain functional decomposition based on prioritized mission areas. Support the analytical agenda from OPNAV N81 and N9I for the specific mission area capabilities. Provide modeling and documentation support for Joint Capability Integration Development System (JCIDS), OPNAV Program Objective Memorandum (POM) process, and ASN (RD&A) Acquisition Process. Coordinate and work across the SYSCOMs and PEOs on the OPNAV Model Based Systems Engineering (MBSE) requirements allocation process. Participate in the definition of MBSE tool functionality and views based on Echelon I stakeholder requirements. Collaboratively develop tool extensions to complement JCIDS and POM processes. Support development of cross-SYSCOM Modeling Standards and Policies for Science and Technology and Program of Records. Create models in the modeling environment. Provide SME support for data science teams in data exploration and analysis, information and knowledge extraction techniques, and application to mission area data requirements. Provide engineering inputs to and review Navy Integrated Capability Concepts for data architecture consistencies. Explore Machine Learning techniques to support human/machine teaming for decision making. Develop an overarching Data Technical Baseline (DTB) and DTB profiles for Program of Records (POR) under SYSCOM cognizance. Assess PORs against their DTB profile during all Systems Engineering Technical Review events and gate reviews. Provide common infrastructure for MBSE and DTB environments, to include access management, configuration management, and help desk support. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	4.651	0.000	4.651

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605217N / *(U)Common Avionics*	**Project (Number/Name)** 3425 / *Digital Warfare Office (DWO) MBE&DT Development*

D. Acquisition Strategy

Procurement strategy is determined by market survey and cooperative opportunities.

E. Performance Metrics

The Digital Warfare Office will set requirements, prioritize resources, and lead efforts on information interoperability and human/machine teaming. This will result in a workforce that is trained in new systems engineering and modeling concepts and tools. It will also result in development of a requirements modeling environment to include associated model extensions, reports, views, and configuration management and in the development of digital technical baselines for programs to use to ensure cross-domain interoperability.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605220N *I (U)Ship to Shore Connector (SSC)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	345.269	7.734	11.088	22.410	-	22.410	1.494	2.087	0.000	0.000	0.000	390.082
3133: *Ship to Shore Connectors Contract Design*	1.991	3.153	3.065	9.003	-	9.003	1.156	2.087	0.000	0.000	0.000	20.455
3137: *SSC Construction*	343.278	4.581	8.023	13.407	-	13.407	0.338	0.000	0.000	0.000	0.000	369.627
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 303												

A. Mission Description and Budget Item Justification

Note: This effort was previously funded under PE 0604567N under projects 3133 and 3137 (FY 2014 and prior).

This PE directly funds and supports the detail design, development, construction, issue resolution, certification, integration and testing to include Live Fire Test and Evaluation (LFT&E) of the Ship to Shore Connector (SSC). The lead craft (Craft 100) will be maintained as a test and training platform throughout its life cycle.

SSC is an air-cushioned landing craft intended to transport personnel, weapon systems, equipment, and cargo from amphibious vessels to shore in assault and non-assault operations. The SSC program provides the capability to rapidly move assault forces within the littoral operational environment to accomplish Unified Command Plan (UCP) missions and ensures the Joint Force Commander's (JFCDR's) ability to conduct amphibious operations and operate over the high water mark, including movement over ice, mud, rivers, swamps and marshes. The SSC program provides the functional replacement for the LCAC craft, including Service Life Extension Program(SLEP) which began to degrade below the Required Operational Capability/Projected Operational Environment (ROC/POE) requirement beginning in 2015. SSC addresses this capability gap.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	7.778	11.088	6.994	-	6.994
Current President's Budget	7.734	11.088	22.410	-	22.410
Total Adjustments	-0.044	0.000	15.416	-	15.416
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.044	0.000			
• Program Adjustments	0.000	0.000	15.300	-	15.300

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*		R-1 Program Element (Number/Name) PE 0605220N *I (U)Ship to Shore Connector (SSC)*			
• Rate/Misc Adjustments	0.000	0.000	0.116	-	0.116

Change Summary Explanation

FY 2018 increase for Ship to Shore Connector lead craft cost to complete ($10 million) and Post Delivery Test & Trials (PDT&T) ($5.3 million).

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605220N / *(U)Ship to Shore Connector (SSC)*	Project (Number/Name) 3133 / *Ship to Shore Connectors Contract Design*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3133: *Ship to Shore Connectors Contract Design*	1.991	3.153	3.065	9.003	-	9.003	1.156	2.087	0.000	0.000	0.000	20.455
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 303

A. Mission Description and Budget Item Justification

Ship to Shore Connector (SSC) - This project provides the Preliminary and Contract design and Class test efforts for the SSC Program. The SSC program provides the capability to rapidly move assault forces within the littoral operational environment to accomplish Unified Command Plan (UCP) missions and ensures the Joint Force Commander's (JFCDR's) ability to conduct amphibious operations and operate over the high water mark, including movement over ice, mud, rivers, swamps and marshes. SSC provides the functional replacement for the LCAC crafts, which begin reaching end of extended service life in 2015. For FY15 and beyond, this project will provide for Class Test and Evaluation of components and systems, as well as all programmatic effort and support activities necessary for the development and execution of Class T&E plans and programs.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Ship to Shore Connectors Contract Design	3.153	3.065	9.003	0.000	9.003
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue Class Test and Evaluation program, including Test Planning and Coordination, and LFT&E.					
FY 2017 Plans: Continue Class Test and Evaluation program, including Test Planning and Coordination, and LFT&E.					
FY 2018 Base Plans: ***Note: FY 2018 increase above FY 2017 is for Post Delivery Test & Trials (PDT&T)($5.3M) to demonstrate SSC's ability to meet the CDD requirements in an operational mission environment, validate full mission sorties, and support certification of readiness for IOT&E. Additional other increase for developmental test and evaluation efforts ($0.6M). Continue Class T&E Program and commence execution of PDT&T on Craft 100, including Integrated Development Test/Operational Test and LFT&E to support VAR II. Post Delivery Test & Trials (PDT&T) will consist of planning and execution of 26 test events to validate first of class certification and performance					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605220N / *(U)Ship to Shore Connector (SSC)*	**Project (Number/Name)** 3133 / *Ship to Shore Connectors Contract Design*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
requirements, characterize the craft operational envelope, provide confidence to certify the craft readiness for IOT&E, and to verify SSC production and performance to support an FRPD. PDT&T tests will support the reliability growth program by conducting 240 hours of on-cushion operations and providing craft level failure data for use with the reliability growth model. The initiation of integrated Developmental and Operational Test and the continuation of LFT&E Events will support DOT&E's recommendation for Full Rate Production. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	3.153	3.065	9.003	0.000	9.003

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTEN 3137: *SSC Construction*	4.581	8.023	13.407	-	13.407	0.338	0.000	0.000	0.000	0.000	369.627
• SCN 5112: *Ship to Shore Connector*	210.630	318.067	217.654	-	217.654	332.521	335.432	335.483	343.745	1,590.004	3,843.136

Remarks

D. Acquisition Strategy

The Test and Training craft (Craft 100) and Craft 101 have been executed on contract. Craft 100 will be procured and constructed with RDTEN. Craft 101 was awarded with RDTEN and transferred to SCN for completion. The Detail Design and Construction contract includes options for construction of an additional seven SCN craft, all of which have been awarded (LCAC 102-108). Detailed Design and Construction contract for LCAC 102-108 ends in FY16. Crafts authorized for FY17-19 will be awarded on a new contract.

E. Performance Metrics

Continue Operation Testing (Phases C and D)
Continue testing of Follow on SCN Craft Production Testing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605220N / *(U)Ship to Shore Connector (SSC)*	**Project (Number/Name)** 3133 / *Ship to Shore Connectors Contract Design*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Post Delivery Test & Trials	Various	SupShip Gulf Coast/ Textron : Various	0.000	0.000		0.000		5.300	Jan 2018	-		5.300	0.000	5.300	-
Developmental Test & Evaluation	Various	Various : Various	0.624	0.000		0.000		0.600	Oct 2017	-		0.600	0.000	1.224	Continuing
Operational Test & Evaluation	Various	Various : Various	0.869	0.898	Oct 2015	1.531	May 2017	1.544	May 2018	-		1.544	0.000	4.842	Continuing
Live Fire Test & Evaluation	Various	Various : Various	0.498	2.255	Oct 2015	1.534	May 2017	1.559	May 2018	-		1.559	0.000	5.846	Continuing
		Subtotal	1.991	3.153		3.065		9.003		-		9.003	0.000	17.212	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.991	3.153		3.065		9.003		-		9.003	0.000	17.212	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605220N / *(U)Ship to Shore Connector (SSC)*	**Project (Number/Name)** 3133 / *Ship to Shore Connectors Contract Design*

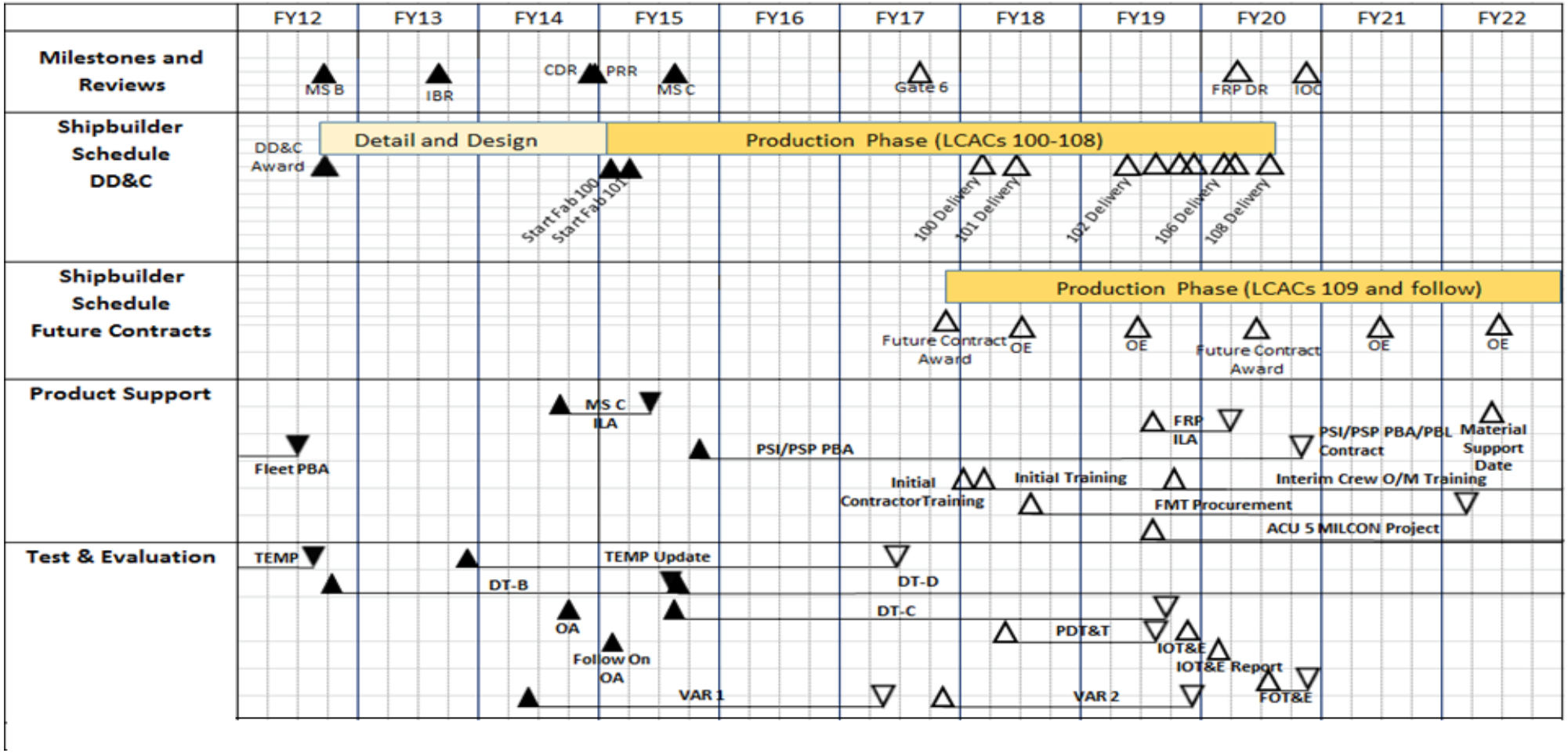


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605220N / *(U)Ship to Shore Connector (SSC)*	**Project (Number/Name)** 3133 / *Ship to Shore Connectors Contract Design*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3133				
Post Delivery Test & Trials (PDT&T)	2	2018	3	2019
Initial Operational Test and Evaluation (IOT&E)	4	2019	4	2019
Full Rate Production (FRP) Program Review (PR)	2	2020	2	2020

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605220N / *(U)Ship to Shore Connector (SSC)*	Project (Number/Name) 3137 / *SSC Construction*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3137: *SSC Construction*	343.278	4.581	8.023	13.407	-	13.407	0.338	0.000	0.000	0.000	0.000	369.627
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 303

A. Mission Description and Budget Item Justification

This project funds the Ship to Shore Connector (SSC) Engineering & Manufacturing Development phase which includes Detail Design and Construction, Product Support, Government Furnished Equipment (GFE), Program support, and Outfitting and Post Delivery. The lead craft will be maintained as a test and training platform throughout its life cycle. The SSC program provides the capability to rapidly move assault forces within the littoral operational environment to accomplish Unified Command Plan (UCP) missions, and ensures the Joint Force Commander's (JFCDR's) ability to conduct amphibious operations and operate over the high water mark, including movement over ice, mud, rivers, swamps and marshes. The SSC program provides the functional replacement for the LCAC craft, which began reaching end of extended service life in 2015. Funding for this effort was previously executed under PE 0604567N.

TEST AND TRAINING CRAFT 100:

Plans/Basic Construction:.....256.805 - (FY18 5.793)
Change Orders:.....13.069 - (FY18 0.000)
Electronic:.....8.417 - (FY18 0.000)
HM&E:.....29.768 - (FY18 3.154)
Other Support:.....33.860 - (FY18 0.835)
Ordnance:.....0.008 - (FY18 0.000)
Post Delivery/Outfitting:.....4.000 - (FY18 3.625)
Total:.....345.927 - (FY18 13.407)

NOTE - The SSC Construction project unit prior year column (FY11-15) total funding is 343.278 for the SSC program. In the prior years FY11-14, the program was funded in PE 0604567N Ship Contract Design/Live Fire T&E. Funds breakout is as follows:

LCAC 100
PE 0604567N 279.863 FY11-14
PE 0605220N 39.715 FY15

LCAC 101
PE 0604567N 23.700 FY13-14

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605220N / *(U)Ship to Shore Connector (SSC)*	**Project (Number/Name)** 3137 / *SSC Construction*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: SSC Construction	4.581	8.023	13.407	0.000	13.407
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue procurement, planning, and construction activities for Test and Training Craft 100.					
FY 2017 Plans: Continue procurement, planning, and construction activities for Test and Training Craft 100 to facilitate a targeted delivery in Q1 FY18.					
FY 2018 Base Plans: ***Note: Cost to complete funds were added ($10.0M) per the Program Manager's estimate at completion increasing the PB 2017 baseline of FY 2018 = $3.4M to $13.4M. Increase is for non-recurring engineering and design efforts, increased material costs, increased manufacturing overhead rates, and for contractor performance. Net increase in this PB 2018 cycle from FY2017 to FY2018 is $5.384M. Continue Production Support and Test & Evaluation efforts. Begin Post Delivery Test and Trials (PDT&T) for craft 100.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	4.581	8.023	13.407	0.000	13.407

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTEN 3133: *Ship to Shore Connectors Contract Design*	3.153	3.065	9.003	-	9.003	1.156	2.087	0.000	0.000	0.000	20.455
• SCN 5112: *Ship to Shore Connector*	210.630	318.067	217.654	-	217.654	332.521	335.432	335.483	343.745	1,590.004	3,843.136

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605220N / *(U)Ship to Shore Connector (SSC)*	**Project (Number/Name)** 3137 / *SSC Construction*

D. Acquisition Strategy

The Test and Training craft (Craft 100) and Craft 101 have been executed on contract. Craft 100 will be procured and constructed with RDTEN. Craft 101 was awarded with RDTEN and transferred to SCN for completion. The Detail Design and Construction contract includes options for construction of an additional seven SCN craft, all of which have been awarded (LCAC 102-108). Detailed Design and Construction contract for LCAC 102-108 ends in FY16. Crafts authorized for FY17-19 will be awarded on a new contract.

E. Performance Metrics

Deliver Test and Training Craft 100.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605220N / *(U)Ship to Shore Connector (SSC)*	**Project (Number/Name)** 3137 / *SSC Construction*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Trng Craft Ship Design	C/CPFF	Various : Various	2.695	0.320	Oct 2016	0.734	Jul 2017	0.000		-		0.000	0.000	3.749	-
Test & Trng Craft Detail Design/Construction	C/FPIF	Textron : New Orleans, LA	27.146	1.178	Oct 2016	3.407	Jul 2017	5.793	Oct 2017	-		5.793	0.000	37.524	-
Test & Trng Craft Government Furnished Equipment (GFE)	Various	Various : Various	0.196	0.014	Oct 2015	0.050	Oct 2016	0.000		-		0.000	0.000	0.260	-
Test & Trng Craft Change Orders	C/FPIF	Textron : New Orleans, LA	6.323	0.980	Oct 2015	0.000		0.000		-		0.000	0.000	7.303	-
Prior Year - PE 0604567N	Various	Not Specified : Not Specified	272.356	0.000		0.000		0.000		-		0.000	0.000	272.356	-
		Subtotal	308.716	2.492		4.191		5.793		-		5.793	0.000	321.192	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Trng Craft Studies and Analysis	Various	Various : Various	0.000	0.012	Oct 2015	0.322	Oct 2016	0.835	Oct 2017	-		0.835	0.000	1.169	-
Test & Trng Craft Integrated Logistics Support	WR	NSWC : Various	0.990	0.563	Oct 2015	2.392	Oct 2016	0.000		-		0.000	0.000	3.945	-
T&T Post Delivery/ Outfitting	Various	SupShip Gulf Coast/ Textron : Various	0.000	0.000		0.375	Mar 2017	3.625	Oct 2017	-		3.625	0.000	4.000	-
Prior Year - PE 0604567N	Various	Not Specified : Not Specified	6.149	0.000		0.000		0.000		-		0.000	0.000	6.149	-
		Subtotal	7.139	0.575		3.089		4.460		-		4.460	0.000	15.263	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605220N / *(U)Ship to Shore Connector (SSC)*	**Project (Number/Name)** 3137 / *SSC Construction*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Trng Craft Construction Test Program	Various	Various : Various	1.163	0.415	Oct 2015	0.000		3.154	Oct 2017	-		3.154	0.000	4.732	-
Prior Year - PE 0604567N	Various	Not Specified : Not Specified	2.268	0.000		0.000		0.000		-		0.000	0.000	2.268	-
		Subtotal	3.431	0.415		0.000		3.154		-		3.154	0.000	7.000	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Trng Craft Contractor Engineering Support	C/CPFF	CSC/Alion : Washington, DC	0.891	1.000	Dec 2016	0.000		0.000		-		0.000	0.000	1.891	-
Travel	Various	Various : Various	0.100	0.099	Oct 2015	0.049	Oct 2016	0.000		-		0.000	0.000	0.248	-
Test & Trng Craft Government Engineering Support	WR	Various : Various	0.213	0.000		0.694	Oct 2016	0.000		-		0.000	0.000	0.907	-
Prior Year - PE 0604567N	Various	Not Specified : Not Specified	22.788	0.000		0.000		0.000		-		0.000	0.000	22.788	-
		Subtotal	23.992	1.099		0.743		0.000		-		0.000	0.000	25.834	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	343.278	4.581		8.023		13.407		-		13.407	0.000	369.289	-

Remarks

***Note: FY 2018 increase above FY 2017 is for non-recurring engineering and design efforts, increased material costs, increased manufacturing overhead rates, and for contractor performance. Cost to complete funds were added in FY 2018 ($10.0M) per the Program Manager's estimate at completion. Net increase = $5.384M.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605220N / *(U)Ship to Shore Connector (SSC)*	**Project (Number/Name)** 3137 / *SSC Construction*

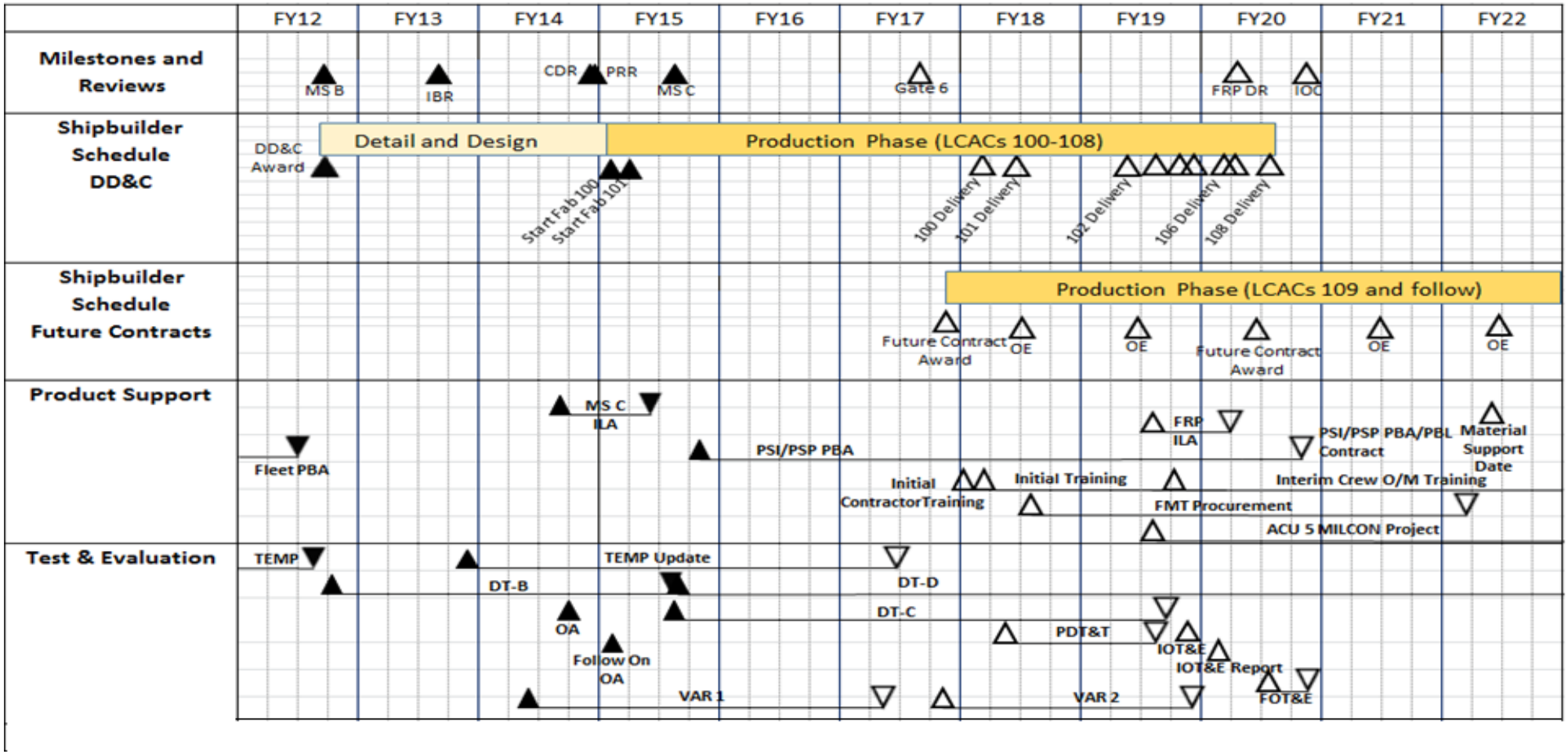


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605220N / *(U)Ship to Shore Connector (SSC)*	**Project (Number/Name)** 3137 / *SSC Construction*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3137				
LCAC 100 - Test and Training Craft Delivery	1	2018	1	2018
Post Delivery Test and Trials (PDT&T)	2	2018	3	2019
Initial Operational Test and Evaluation (IOT&E)	4	2019	4	2019
Full Rate Production (FRP) Program Review (PR)	2	2020	2	2020

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605327N *I (U)T-AO 205 Class*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	1.095	1.961	-	1.961	1.312	1.916	0.914	0.930	Continuing	Continuing
3375: *T-AO 205 Class Development*	0.000	0.000	1.095	1.961	-	1.961	1.312	1.916	0.914	0.930	Continuing	Continuing

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): P452

A. Mission Description and Budget Item Justification

T-AO 205 John Lewis Fleet Oiler Class Test and Evaluation (T&E) in support of recapitalization of the existing T-AO 187 Fleet Oiler Class. The Navy's Combat Logistics Force (CLF) oilers supply fuel and dry cargo to Navy ships at sea. The T-AO 205 Class will operate as shuttle ships from resupply ports to customer ships. Additionally, in conjunction with a T-AKE, they will accompany and stay on-station with a Carrier Strike Group (CSG) to provide fuel as required to customer ships.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	1.095	1.842	-	1.842
Current President's Budget	0.000	1.095	1.961	-	1.961
Total Adjustments	0.000	0.000	0.119	-	0.119
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	0.100	-	0.100
• Rate/Misc Adjustments	0.000	0.000	0.019	-	0.019

Change Summary Explanation

Efforts previously funded under the Ship Preliminary Design and Feasibility Studies Line (0603564N).

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605327N / *(U)T-AO 205 Class*	Project (Number/Name) 3375 / *T-AO 205 Class Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3375: *T-AO 205 Class Development*	0.000	0.000	1.095	1.961	-	1.961	1.312	1.916	0.914	0.930	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: P452

A. Mission Description and Budget Item Justification

T-AO 205 John Lewis Fleet Oiler Class Test and Evaluation (T&E) in support of recapitalization of the existing T-AO 187 Fleet Oiler Class. The Navy's Combat Logistics Force (CLF) oilers supply fuel and dry cargo to Navy ships at sea. The T-AO 205 Class will operate as shuttle ships from resupply ports to customer ships. Additionally, in conjunction with a T-AKE, they will accompany and stay on-station with a Carrier Strike Group (CSG) to provide fuel as required to customer ships.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: T-AO 205 Test and Evaluation	0.000	1.095	1.961	0.000	1.961
Articles:	-	-	-	-	-

FY 2016 Accomplishments:
N/A

FY 2017 Plans:
Support the execution of Test and Evaluation Developmental Test (DT) and Operational Test (OT) schedule per the Test and Evaluation Master Plan (TEMP). Plan and execute DT Phase DT-B and DT Assist. Begin preparation of the System Vulnerability Assessment. Support LFT&E efforts by conducting Mine Susceptibility Modeling and Simulation using the Total Mine Simulator System (TMSS). Begin Probability of Kill Given a Hit (Pk/h)-based vulnerability assessments. Coordinate efforts with NAVSEA, MSC, PEO Ships, COMOPTEVFOR, JITC and OSD DOT&E.

FY 2018 Base Plans:
Support the execution of Test and Evaluation DT and OT schedule per the TEMP. Continue execution of DT Phase DT-B. Develop Test Plans for OT Phase OT-C, Initial Operational Test and Evaluation (IOT&E). Conduct Detailed Design Survivability Assessment in support of shot selection for Damage Scenario Based Engineering Analysis (DSBEA) and Final Vulnerability Assessment Report (FSAR). Coordinate efforts with NAVSEA, MSC, PEO Ships, COMOPTEVFOR, JITC and OSD DOT&E.

FY 2018 OCO Plans:

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605327N / *(U)T-AO 205 Class*	**Project (Number/Name)** 3375 / *T-AO 205 Class Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Accomplishments/Planned Programs Subtotals	0.000	1.095	1.961	0.000	1.961

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SCN/5025: *T-AO 205 Class*	674.190	73.079	541.056	-	541.056	520.613	534.530	528.119	537.814	7,185.000	10,594.401

Remarks

D. Acquisition Strategy

The first Fleet Oiler was awarded in FY16. Fleet oilers will comply with the Oil Pollution Act of 1990 (OPA-90) and International Marine Pollution Regulation (MARPOL) requirements.

E. Performance Metrics

None.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605327N / *(U)T-AO 205 Class*	Project (Number/Name) 3375 / *T-AO 205 Class Development*	

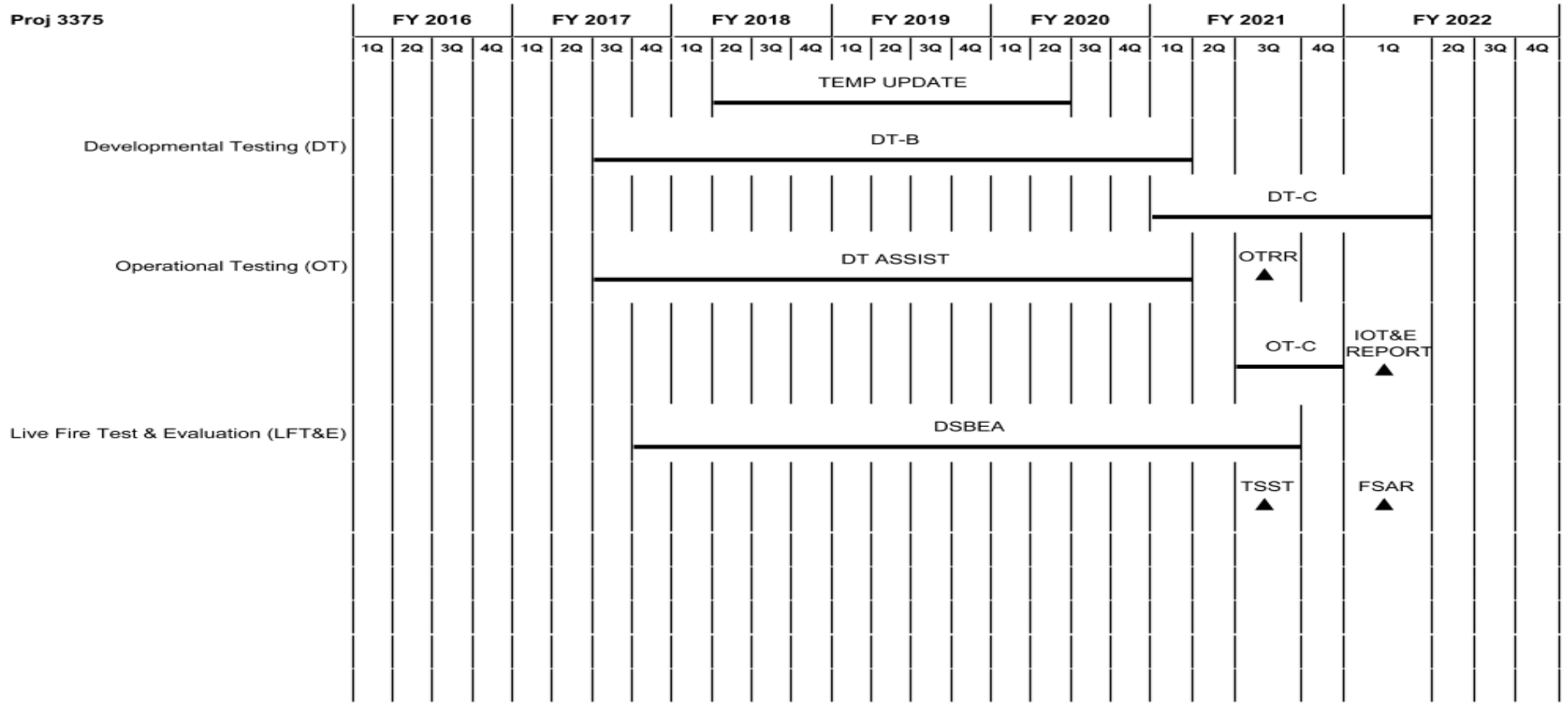
Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	Various	Various : Various	0.000	0.000		0.340	May 2017	0.632	Jan 2018	-		0.632	Continuing	Continuing	Continuing
Operational Test & Evaluation	Various	Various : Various	0.000	0.000		0.500	May 2017	0.613	Jan 2018	-		0.613	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	Various	Various : Various	0.000	0.000		0.255	May 2017	0.716	Jan 2018	-		0.716	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		1.095		1.961		-		1.961	-	-	-

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		1.095		1.961		-		1.961	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605327N / *(U)T-AO 205 Class*	**Project (Number/Name)** 3375 / *T-AO 205 Class Development*



2018PB - 0605327N - 3375

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605327N / *(U)T-AO 205 Class*	**Project (Number/Name)** 3375 / *T-AO 205 Class Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3375				
Test & Evaluation Master Plan (TEMP) Update	2	2018	2	2020
Developmental Testing (DT): DT Phase B (PAT&E)	3	2017	1	2021
Developmental Testing (DT): DT Phase C (PDT&T)	1	2021	1	2022
Operational Testing (OT): DT Assist	3	2017	1	2021
Operational Testing (OT): Operational Test Readiness Review (OTRR)	3	2021	3	2021
Operational Testing (OT): OT Phase C (IOT&E)	3	2021	4	2021
Operational Testing (OT): Initial Operational Test and Evaluation (IOT&E) Report	1	2022	1	2022
Live Fire Test & Evaluation (LFT&E): Detailed Design Survivability Assessment (DSBEA)	4	2017	3	2021
Live Fire Test & Evaluation (LFT&E): Total Ship Survivability Trial (TSST)	3	2021	3	2021
Live Fire Test & Evaluation (LFT&E): Final Survivability Assessment Report (FSAR)	1	2022	1	2022

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605414N *I (U) Unmanned Carrier Aviation (UCA)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	0.000	89.000	222.208	-	222.208	484.950	612.793	515.313	554.604	Continuing	Continuing
3278: *MQ-25 Development*	0.000	0.000	89.000	222.208	-	222.208	484.950	612.793	515.313	554.604	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** P462												

Note

Elements of the MQ-25 program were previously funded under the Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) System Program Element (PE) 0604404N, Project Unit (PU) 3278 and assigned to Budget Activity (BA) 05: System Development and Demonstrations (SDD). In January of 2016, PE 0605414N PU 3278 was established as the principal budget line for MQ-25.

The President's Budget FY17 PE 0605414N PU 3278 submission was initially regarded as Carrier Based Aerial Refueling System (CBARS)/UCLASS Development. To better align with the mission and capability funded under PE 0605414N, it is now referred to as Unmanned Carrier Aviation (UCA)/MQ-25.

A. Mission Description and Budget Item Justification

The MQ-25 program rapidly develops an unmanned capability to embark on CVN's as part of the Carrier Air Wing (CVW) to conduct aerial refueling as a primary mission and provide Intelligence, Surveillance, Reconnaissance (ISR) capability as a secondary mission. MQ-25 extends CVW mission effectiveness range, partially mitigates the current Carrier Strike Group (CSG) organic ISR shortfall and fills the future CVW-tanker gap, mitigating Strike Fighter shortfall and preserving F/A-18E/F Fatigue Life . As the first carrier-based, group 5 Unmanned Aircraft System (UAS), MQ-25 will pioneer the integration of manned and unmanned operations, demonstrate mature complex sea-based C4I UAS technologies, and pave the way for future multifaceted multi-mission UAS to pace emerging threats.

MQ-25 requirements are aligned with the Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) Initial Capabilities Document (ICD) and the Next Generation Air Dominance (NGAD) Family of Systems (FoS) ICD, which highlight the need for carrier-based refueling and persistent ISR capabilities. The Joint Requirements Oversight Council (JROC) endorsed the UCLASS ICD in April 2011 and formally approved it on 9 Jun 11 via Joint Requirements Oversight Council Memorandum (JROCM) 087-11. The NGAD FoS ICD was validated by the JROC on 18 August 2015 and formally approved by JROCM 087-15. The JROC's guidance delineated in the validated ICDs and subsequent JROCMs was to establish a requirement for a versatile platform that supports a myriad of organic Naval missions such as aerial refueling and ISR to support the CSG. MQ-25 is expected to provide an Initial Operational Capability to the fleet by the mid-2020s.

This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes some projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production decision.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605414N *I (U) Unmanned Carrier Aviation (UCA)*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	89.000	349.000	-	349.000
Current President's Budget	0.000	89.000	222.208	-	222.208
Total Adjustments	0.000	0.000	-126.792	-	-126.792
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	-127.500	-	-127.500
• Rate/Misc Adjustments	0.000	0.000	0.708	-	0.708

Change Summary Explanation

Technical: Not applicable.

Schedule/Funding: Air Segment RFP release moved from 1QFY2017 to 3QFY2017 driving $127.5M FY 2018 Program Reduction from PB17 to PB18 due to the deferral of the Air Segment EMD contract award from 2QFY2018 to 3QFY2018.

Air Segment System Integration incorrectly shown at PB17 as commencing 2QFY2018; updated to reflect 2QFY2019.

CVN Fleet CS Deliveries and Hull, Mechanical & Electrical (HME) installations updated to better align with ship availability schedules.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	Project (Number/Name) 3278 / *MQ-25 Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3278: *MQ-25 Development*	0.000	0.000	89.000	222.208	-	222.208	484.950	612.793	515.313	554.604	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	2	2	-	-		

Project MDAP/MAIS Code: P462

A. Mission Description and Budget Item Justification

The MQ-25 program rapidly develops an unmanned capability to embark on CVN's as part of the Carrier Air Wing (CVW) to conduct aerial refueling as a primary mission and provide Intelligence, Surveillance, Reconnaissance (ISR) capability as a secondary mission. MQ-25 extends CVW mission effectiveness range, partially mitigates the current Carrier Strike Group (CSG) organic ISR shortfall and fills the future CVW-tanker gap, mitigating Strike Fighter shortfall and preserving F/A-18E/F Fatigue Life . As the first carrier-based, group 5 Unmanned Aircraft System (UAS), MQ-25 will pioneer the integration of manned and unmanned operations, demonstrate mature complex sea-based C4I UAS technologies, and pave the way for future multifaceted multi-mission UAS to pace emerging threats.

MQ-25 requirements are aligned with the Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) Initial Capabilities Document (ICD) and the Next Generation Air Dominance (NGAD) Family of Systems (FoS) ICD, which highlight the need for carrier-based refueling and persistent ISR capabilities. The Joint Requirements Oversight Council (JROC) endorsed the UCLASS ICD in April 2011 and formally approved it on 9 Jun 11 via Joint Requirements Oversight Council Memorandum (JROCM) 087-11. The NGAD FoS ICD was validated by the JROC on 18 August 2015 and formally approved by JROCM 087-15. The JROC's guidance delineated in the validated ICDs and subsequent JROCMs was to establish a requirement for a versatile platform that supports a myriad of organic Naval missions such as aerial refueling and ISR to support the CSG. MQ-25 is expected to provide an Initial Operational Capability to the fleet by the mid-2020s.

MQ-25 will be designed to conduct aerial refueling and ISR missions. MQ-25 will have the ability to pass sensor data to other aircraft, naval vessels, and ground forces. Sensor data will be transmitted, in either raw or processed forms, at appropriate classification levels, to exploitation nodes afloat and ashore (e.g. Distributed Common Ground System - Navy). The MQ-25 system will be sustainable onboard an aircraft carrier, as well as ashore, and will be designed to minimize the logistics footprint of the current CVW.

MQ-25 will achieve these capabilities through the use of a carrier-suitable, semi-autonomous, Unmanned Air Segment; a Control System and Connectivity Segment; and a Carrier Segment. The Government will perform Lead Systems Integration (LSI), providing government-led system of systems integration for the MQ-25 Program. The LSI will coordinate across all segments and with external stakeholders to ensure program activities are synchronized. MQ-25 will interface with existing ship and land-based command and control systems, including ISR Tasking, Collection, Processing, Exploitation, and Dissemination systems.

The scope of the program includes, but is not limited to, system level requirements identification, allocation of requirements to segments and components, design, development, integration, fabrication, test, training, and support activities to provide the MQ-25 capabilities. To accomplish these capabilities MQ-25 will transition (as required) technologies from other programs and adapt them into the carrier environment. MQ-25 will deliver the necessary air vehicles, command, control, connectivity,

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	**Project (Number/Name)** 3278 / *MQ-25 Development*

shipboard and land-based launch and recovery control systems, associated support systems, interfaces, and upgrades to other Navy systems (as required) to meet the required capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Air Segment Product Development	0.000	12.578	89.314	0.000	89.314
Articles:	-	-	-	-	-
Description: Air Segment Product Development efforts include, but are not limited to, design, development, integration, fabrication, test and training to deliver a carrier-suitable, semi-autonomous, unmanned vehicle capable of aerial refueling (give) and persistent Intelligence, Surveillance, and Reconnaissance (ISR) operations. A prime contractor (selected following a limited source competition) will deliver the Air Segment products. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Release final Request for Proposal for the MQ-25 Air System contract and begin source selection activities. Continue Air Segment system integration and interface development activities. ***FY 2018 Base Plans:*** Complete MQ-25 source selection activities, conduct acquisition Milestone, and award Air System contract. Begin Air System contract activities. Continue Air Segment system integration and interface development activities. ***FY 2018 OCO Plans:*** N/A					
Title: Control System & Connectivity (CS&C) Segment Product Development	0.000	29.375	42.626	0.000	42.626
Articles:	-	-	-	-	-
Description: CS&C Segment Product Development is a Government-led effort which includes, but is not limited to, the hardware, software, and networks needed to establish interfaces and upgrades to existing ship and land-based command and control systems. ***FY 2016 Accomplishments:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	**Project (Number/Name)** 3278 / *MQ-25 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** Perform Control System & Connectivity hardware/software development and integration. Continue development and fabrication of Common Processing System/Common Display System based control stations, to include the test-transportable control station and test-ashore control station, in order to meet timelines required to support integration and flight test. Conduct control station requirements verification/validation activities in Government integration lab. Continue integration of Automated Digital Network System hardware/software components. Continue integration testing between control station with shipboard networks and data links. ***FY 2018 Base Plans:*** Perform Control System & Connectivity hardware/software development, integration and testing. Continue development and fabrication of Common Processing System/Common Display System-based control stations and hardware/software solutions required to enable data exchanges with shipboard and shore-based networks. Continue development and hardware hosting of open architecture mission systems software applications and integration with air vehicle command and control software. Continue integration among airborne, shipboard and terrestrial Automated Digital Network System hardware/software nodes. Continue integration and testing among control stations with shipboard and shore-based networks and data links. Conduct control station requirements verification/validation activities in Government integration lab facilities in order to meet program timelines required to support system-of-systems integration and flight test. ***FY 2018 OCO Plans:*** N/A					
Title: Carrier (CVN) Segment Product Development ***Articles:*** ***Description:*** CVN Segment Product Development is a Government-led effort which includes, but is not limited to, upgrades to existing CVN infrastructure to support MQ-25 capabilities. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:***	0.000 -	18.149 -	31.139 -	0.000 -	31.139 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	**Project (Number/Name)** 3278 / *MQ-25 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Perform ship installation activities and upgrades to existing CVN infrastructure, especially critical CVN suitable technologies and mission essential equipment. Continue engineering efforts to develop and implement Ship Change Documents (SCDs), Ship Installation Drawings (SIDs), and Engineering Change Proposals (ECPs), and begin modifying CVNs for MQ-25 hardware and software. Continue CVN ship integration activities and development of Concepts of Employment (CONEMPs). Continue to design and development specific modifications to existing Program of Record shipboard systems (i.e. landing systems and Aircraft Launch and Recovery Systems) needed to support the MQ-25 capability to include required hardware for shipboard test and integration activities. Continue development of Navy Modernization Program (NMP) supporting shipboard Configuration Management and Logistics. ***FY 2018 Base Plans:*** Begin developing software to support communication system integration with the MQ-25. Perform ship installations and upgrades to existing CVN infrastructure, especially critical CVN suitable technologies and mission essential equipment. Continue engineering efforts to develop and implement Ship Change Documents (SCDs), Ship Installation Drawings (SIDs), and Engineering Change Proposals (ECPs), and begin modifying CVNs for MQ-25 hardware and software during inflexible pier-side maintenance availability periods. Continue CVN ship integration activities and development/refinement of Concepts of Employment (CONEMPs) in accordance with NAVSEA, SPAWAR, PEO (CARRIERS), CNAF, and OPNAV processes. Continue to design and develop specific modifications to existing Program of Record (PoR) shipboard systems (i.e. Landing Systems, Information Distribution Systems and Aircraft Launch and Recovery Systems) needed to support the MQ-25 capability to include required hardware and software for shipboard test and integration activities. Continue development of Navy Modernization Program (NMP) supporting shipboard Configuration Management and Logistics. ***FY 2018 OCO Plans:*** N/A					
Title: Lead Systems Integration (LSI) Product Development	0.000	14.498	32.991	0.000	32.991
Articles:	-	-	-	-	-
Description: Lead Systems Integration (LSI) tasks are a Government-led effort including, but not limited to, advanced development, architecture development, interface definition, integration, system level test and evaluation, science and technology investments, roadmap refinement, and coordination of all MQ-25 capabilities across system segments and stakeholders.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	**Project (Number/Name)** 3278 / *MQ-25 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: N/A ***FY 2017 Plans:*** Perform MQ-25 concept refinement and Air System contract source selection activities. Continue Air Segment, Control System & Connectivity Segment, and Carrier Segment development, design, integration, interface and architecture refinement and modification activities. Continue fabrication and operation of system integration laboratories and test facilities in support of government-led development and test program activities, including implementation of open system architectures. ***FY 2018 Base Plans:*** Complete MQ-25 concept refinement and Air System contract source selection activities. Continue Air Segment, Control System & Connectivity Segment, and Carrier Segment development, design, integration, interface and architecture refinement and modification activities. Continue fabrication and operation of system integration laboratories and test facilities in support of government-led development and test program activities, including implementation of open system architectures. ***FY 2018 OCO Plans:*** N/A					
Title: Management	0.000	6.250	6.495	0.000	6.495
Articles:	-	-	-	-	-
Description: Efforts include program, engineering, test, and logistics management. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Perform oversight, coordination, and management of MQ-25 acquisition, system interface and integration activities. Oversee contract activities, including source selection for the Air System contract. Conduct logistics management tasks. Maintain security and program office environments. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	**Project (Number/Name)** 3278 / *MQ-25 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Perform oversight, coordination, and management of MQ-25 acquisition, system interface and integration activities. Oversee contract activities, including source selection for the Air System contract. Conduct logistics management tasks. Maintain security and program office environments. ***FY 2018 OCO Plans:*** N/A					
Title: Test and Evaluation ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Support development and implementation of test facility, range, and lab test requirements. Support engineering events and program management activities. Support Test and Evaluation Master Plan development. Conduct developmental test for Control System & Connectivity and Carrier segments. Support Air Segment Request for Proposal/source selection activities. ***FY 2018 Base Plans:*** Continue to support development and implementation of test facilities, range, and lab test requirements. Support updates to the Test and Evaluation Master Plan (TEMP) development, support engineering events, and program management activities. Support developmental test for Control System & Connectivity and Carrier segments. Support Air Segment source selection activities. Support the accelerated stand-up of the Government Systems test & Integration Lab (STIL) in support of the FY2018 EMD contract award. ***FY 2018 OCO Plans:*** N/A	0.000 -	5.606 -	14.092 -	0.000 -	14.092 -
Title: Support ***Articles:*** ***Description:*** Efforts include studies, analyses, and training development support. ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:***	0.000 -	2.544 -	5.551 -	0.000 -	5.551 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	**Project (Number/Name)** 3278 / *MQ-25 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue logistics supportability studies and analyses, modeling and simulation, support of Manned Flight Simulation efforts, development of training tools for the Fleet, and development of manpower and training assessments. ***FY 2018 Base Plans:*** Continue logistics supportability studies and analyses, modeling and simulation, and support of Manned Flight Simulation efforts. Increase development efforts of training tools for the Fleet, and development of manpower and training assessments, to support EMD contract award and timeline. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	89.000	222.208	0.000	222.208

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 1205/0816376N: *UCLASS T&E Facility*	0.000	40.576	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	40.576
• 1319/0604404N/3278: *UCLASS Development*	114.376	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	539.182
• 1319/0604404N/C277: *Competitive Air Vehicle*	250.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	250.000
• 1319/0604404N/C278: *Government and Industry Source Selection*	50.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	50.000

Remarks

D. Acquisition Strategy

The Government will perform Lead Systems Integration (LSI) across all MQ-25 segments, including Air Segment, Control System & Connectivity (CS&C) Segment, and Carrier (CVN) Segment and external enterprise stakeholders. The MQ-25 Program will leverage existing Navy information dissemination and Department infrastructures, as the government-led system of systems integration is accomplished across all segments and external enterprise stakeholders. The Government will manage the system level architecture and interfaces, and foster efficient data exchanges and integration. Specifically, the CS&C and CVN segments will be organically managed by the Government LSI and will modify existing systems via the affected system's Engineering Change Proposal and configuration management processes. These

integration tasks include successful demonstration of integration with the CVN landing system, integration of control system, and integration with the Tasking, Collecting, Processing, Exploitation, Dissemination interfaces to include successful transmission of mission system data. The Government will develop and award contracts as required to support program activities, including a contract for the Air System. The Government's acquisition strategy was approved on 7 Jun 13. Acquisition and contracting strategies comply with current statutes, regulations, and instructions.

E. Performance Metrics

Meet Navy operational requirements as defined in requirements documents.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	**Project (Number/Name)** 3278 / *MQ-25 Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Air Segment - Primary Hardware Development	C/FPIS	TBD : TBD	0.000	0.000		0.000		80.483	Jun 2018	-		80.483	Continuing	Continuing	Continuing
Air Segment - Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.000		10.724	Nov 2016	8.264	Nov 2017	-		8.264	Continuing	Continuing	Continuing
Air Segment - Systems Engineering	WR	NAWCWD : China Lake, CA	0.000	0.000		0.315	Nov 2016	0.324	Nov 2017	-		0.324	0.000	0.639	-
Air Segment - Systems Engineering	Various	Various : Various	0.000	0.000		1.539	Mar 2017	0.243	Mar 2018	-		0.243	0.000	1.782	-
CS&C Segment	WR	NAWCAD : Patuxent River, MD	0.000	0.000		7.228	Nov 2016	7.409	Nov 2017	-		7.409	Continuing	Continuing	Continuing
CS&C Segment	Various	Various : Various	0.000	0.000		2.997	Dec 2016	2.994	Dec 2017	-		2.994	Continuing	Continuing	Continuing
CS&C Segment	Various	NSMA : Arlington, VA	0.000	0.000		1.349	Dec 2016	1.347	Dec 2017	-		1.347	Continuing	Continuing	Continuing
CS&C Segment	WR	SPAWAR : San Diego, CA	0.000	0.000		4.845	Dec 2016	4.969	Dec 2017	-		4.969	Continuing	Continuing	Continuing
CS&C Segment (Comms, Intel, Network)	Various	Various : Various	0.000	0.000		6.076	Dec 2016	6.070	Dec 2017	-		6.070	Continuing	Continuing	Continuing
CS&C Segment (CPS/ CDS)	Various	Various : Various	0.000	0.000		6.880	Nov 2016	19.837	Nov 2017	-		19.837	Continuing	Continuing	Continuing
Carrier Segment (Ship Integration)	Various	Various : Various	0.000	0.000		0.569	Dec 2016	0.580	Dec 2017	-		0.580	Continuing	Continuing	Continuing
Carrier Segment (Ship Integration)	WR	NAWCAD : Patuxent River, MD	0.000	0.000		14.555	Dec 2016	27.568	Dec 2017	-		27.568	Continuing	Continuing	Continuing
Carrier Segment (Ship Integration)	WR	NAWCAD : Lakehurst, NJ	0.000	0.000		1.130	Dec 2016	1.178	Dec 2017	-		1.178	Continuing	Continuing	Continuing
Carrier Segment	WR	SPAWAR : San Diego, CA	0.000	0.000		1.895	Dec 2016	1.813	Dec 2017	-		1.813	Continuing	Continuing	Continuing
LSI - Advanced Development (Primary Hardware Development)	Various	NSMA : Arlington, VA	0.000	0.000		0.179	Dec 2016	0.183	Dec 2017	-		0.183	0.000	0.362	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	**Project (Number/Name)** 3278 / *MQ-25 Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
LSI - Advanced Development (Primary Hardware Development)	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.093	Dec 2016	0.189	Dec 2017	-		0.189	Continuing	Continuing	Continuing
LSI - Advanced Development (Primary Hardware Development)	WR	NAWCWD : China Lake, CA	0.000	0.000		0.146	Nov 2016	0.000		-		0.000	Continuing	Continuing	Continuing
LSI - Systems Engineering	Various	Various : Various	0.000	0.000		1.997	Dec 2016	2.046	Dec 2017	-		2.046	Continuing	Continuing	Continuing
LSI - Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.000		10.205	Dec 2016	28.038	Dec 2017	-		28.038	Continuing	Continuing	Continuing
LSI - Systems Engineering	Various	SPAWAR : San Diego, CA	0.000	0.000		1.878	Nov 2016	2.535	Nov 2017	-		2.535	0.000	4.413	-
		Subtotal	0.000	0.000		74.600		196.070		-		196.070	-	-	-

Remarks

Control System and Connectivity (CS&C)
Navy Systems Management Activity (NSMA)
Common Display System (CDS)
Common Processing System (CPS)
Lead Systems Integration (LSI)

Air Segment (AS) Primary Hardware Development increase from FY17 to FY18 supports award of AS contract in FY18.
CS&C CPS/CDS funding increase from FY17 to FY18 supports fabrication of Ship Control Test Stations. Timing is dictated by ship availability schedules.
Carrier Segment funding increase from FY17 to FY18 supports increased SCD Development/Installation Plan/Verification activities. The ramp up supports the ship installs and test activities.
LSI funding increase from FY17 to FY18 supports Capability Verification efforts. Capability Verification will be conducted during the entire fiscal year in FY18; FY17 Capability Verification efforts will cover less than half the FY.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Manpower Studies & Analyses	Various	Various : Various	0.000	0.000		0.106	Jan 2017	0.113	Nov 2017	-		0.113	Continuing	Continuing	Continuing
Training Development	Various	Various : Various	0.000	0.000		2.438	Dec 2016	5.438	Dec 2017	-		5.438	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	Project (Number/Name) 3278 / *MQ-25 Development*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	0.000	0.000		2.544		5.551		-		5.551	-	-	-

Remarks

Support increases from FY17 to FY18 to acquire hardware for Mission Systems Trainer (MST) development in support of the Integrated Test Team (ITT) aircrew training timeline.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	WR	NAWCAD : Patuxent River, MD	0.000	0.000		5.595	Dec 2016	14.079	Dec 2017	-		14.079	Continuing	Continuing	Continuing
Test and Evaluation	Various	Various : Various	0.000	0.000		0.011	Jan 2017	0.013	Jan 2018	-		0.013	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		5.606		14.092		-		14.092	-	-	-

Remarks

Test and Evaluation increases from FY17 to FY18 in order to acquire hardware for the stand-up of the government System Test & Integration Lab (STIL) to support Engineering and Manufacturing Design (EMD) contract award in 3QFY18.

Management Services ($ in Millions)

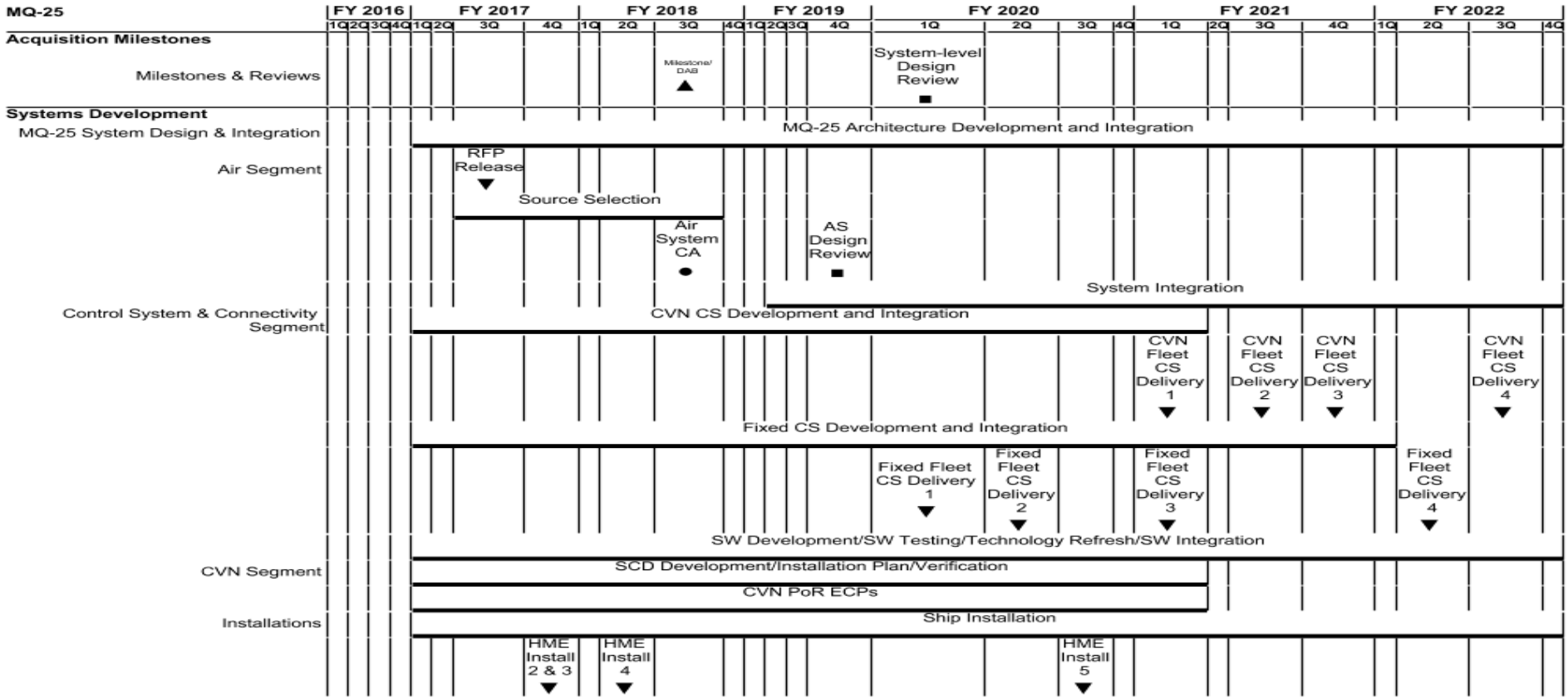
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management	Various	Various : Various	0.000	0.000		1.735	Dec 2016	1.769	Dec 2017	-		1.769	Continuing	Continuing	Continuing
Management	WR	NAWCAD : Patuxent River, MD	0.000	0.000		4.388	Nov 2016	4.596	Nov 2017	-		4.596	Continuing	Continuing	Continuing
Management	Various	NAVAIR : Patuxent River, MD	0.000	0.000		0.127	Oct 2016	0.130	Oct 2017	-		0.130	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		6.250		6.495		-		6.495	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	Project (Number/Name) 3278 / *MQ-25 Development*	

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		89.000		222.208		-		222.208	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	**Project (Number/Name)** 3278 / *MQ-25 Development*



2018PB - 0605414N - 3278 CS delivery and HM&E schedules are predicated on ship availability. CVN Fleet CS Deliveries and HM&E installations updated to better align with ship availability schedules.
Air Segment System Integration incorrectly shown at PB17 as commencing 2QFY2018; updated to reflect 2QFY2019.

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	**Project (Number/Name)** 3278 / *MQ-25 Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MQ-25				
Acquisition Milestones: Milestones & Reviews: Milestone/Defense Acquisition Board (DAB)	3	2018	3	2018
Acquisition Milestones: Milestones & Reviews: System-level Design Review	1	2020	1	2020
Systems Development: MQ-25 System Design & Integration: MQ-25 Architecture Development and Integration	1	2017	4	2022
Systems Development: Air Segment: RFP Release for Air System Contract Award	3	2017	3	2017
Systems Development: Air Segment: Source Selection Activities	3	2017	3	2018
Systems Development: Air Segment: Air System Contract Award	3	2018	3	2018
Systems Development: Air Segment: Air System Design Review	4	2019	4	2019
Systems Development: Air Segment: System Integration	2	2019	4	2022
Systems Development: Control System & Connectivity Segment: Carrier Vessel Nuclear (CVN) Control Station (CS) Development and Integration	1	2017	1	2021
Systems Development: Control System & Connectivity Segment: CVN Fleet CS Delivery 1	1	2021	1	2021
Systems Development: Control System & Connectivity Segment: CVN Fleet CS Delivery 2	3	2021	3	2021
Systems Development: Control System & Connectivity Segment: CVN Fleet CS Delivery 3	4	2021	4	2021
Systems Development: Control System & Connectivity Segment: CVN Fleet CS Delivery 4	3	2022	3	2022
Systems Development: Control System & Connectivity Segment: Fixed CS Development and Integration	1	2017	1	2022

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605414N / *(U) Unmanned Carrier Aviation (UCA)*	**Project (Number/Name)** 3278 / *MQ-25 Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Systems Development: Control System & Connectivity Segment: Fixed Fleet CS Delivery 1	1	2020	1	2020
Systems Development: Control System & Connectivity Segment: Fixed Fleet CS Delivery 2	2	2020	2	2020
Systems Development: Control System & Connectivity Segment: Fixed Fleet CS Delivery 3	1	2021	1	2021
Systems Development: Control System & Connectivity Segment: Fixed Fleet CS Delivery 4	2	2022	2	2022
Systems Development: Control System & Connectivity Segment: Software (SW) Development/SW Testing/Technology Refresh/SW Integration	1	2017	4	2022
Systems Development: CVN Segment: Ship Change Document (SCD) Development/ Installation Plan/Verification	1	2017	1	2021
Systems Development: CVN Segment: CVN Program of Record (PoR) Engineering Change Proposals (ECP)	1	2017	1	2021
Systems Development: Installations: Ship Installation	1	2017	4	2022
Systems Development: Installations: Hull, Mechanical & Electrical (HME) Install 2 & 3	4	2017	4	2017
Systems Development: Installations: HME Install 4	2	2018	2	2018
Systems Development: Installations: HME Install 5	3	2020	3	2020

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605450N *I Joint Air-to-ground Missile (JAGM)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	175.806	25.640	17.880	15.473	-	15.473	7.086	0.242	0.269	0.276	Continuing	Continuing
2211: *Joint Air-to-Ground Missile*	175.806	25.640	17.880	15.473	-	15.473	7.086	0.242	0.269	0.276	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** P355												

A. Mission Description and Budget Item Justification

The Joint Air-to-Ground Missile (JAGM) is an air-launched missile system that will utilize dual-mode seeker technology providing advanced line-of-sight and beyond-line-of-sight capabilities, including precision point and fire-and-forget seeker targeting and increased lethality against soft, hardened, moving, stationary, land, maritime threats. JAGM will additionally provide robust capability in adverse weather day or night and in obscured/countermeasure environments. The JAGM Increment 1 system will replace aviation-launched; tube-launched, optically-tracked, wire-guided, and Helicopter Launched Fire-&-Forget Missile System (HELLFIRE). JAGM is an Army-led joint program that addresses rotary wing, fixed wing, and unmanned aerial vehicle requirements. The Department of Navy threshold platform is the AH-1Z. The JAGM system includes missile, trainers, container, support equipment and software modifications to the M-299 launcher.

The JAGM program is part of the Navy's Integrated Fire Control (IFC) approach to address advanced threat capabilities in the Anti-Access/Area-Denial (A2AD) environment. IFC solutions enable individual system capabilities to be leveraged across an effects chain, placing the full spectrum of tactical capability in the hands of the warfighter. IFC solutions that push engagement distances beyond the launch platform's radar horizon and allows the United States Navy to operate in, and control, contested battle space in littoral waters and A2/AD environments are increasingly critical as more and more scenarios require compressed and coordinated fire control timelines.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under system development and demonstration because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0605450N *I Joint Air-to-ground Missile (JAGM)*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	25.898	17.880	15.834	-	15.834
Current President's Budget	25.640	17.880	15.473	-	15.473
Total Adjustments	-0.258	0.000	-0.361	-	-0.361
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.261	0.000			
• SBIR/STTR Transfer	-0.520	0.000			
• Program Adjustments	0.000	0.000	-0.990	-	-0.990
• Rate/Misc Adjustments	0.001	0.000	0.629	-	0.629

Change Summary Explanation

The FY 2018 funding request was reduced by $0.990 million to account for the availability of prior year execution balances.

Schedule: The JAGM acquisition milestones were changed as a result of production delays affecting the test asset deliveries. Milestone C was changed from 4Q FY2017 to 3Q FY2018. FRP was changed from 3Q FY2019 to 4Q FY2019, and IOC was changed from 4Q FY2019 to 2Q FY2020. In concurrence, there were changes to the test and evaluation and production milestones to align with the revised Milestone C and FRP dates.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605450N / *Joint Air-to-ground Missile (JAGM)*	Project (Number/Name) 2211 / *Joint Air-to-Ground Missile*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2211: *Joint Air-to-Ground Missile*	175.806	25.640	17.880	15.473	-	15.473	7.086	0.242	0.269	0.276	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: P355

A. Mission Description and Budget Item Justification

The Joint Air-to-Ground Missile (JAGM) is an air-launched missile system that will utilize dual-mode seeker technology providing advanced line-of-sight and beyond-line-of-sight capabilities, including precision point and fire-and-forget seeker targeting and increased lethality against soft, hardened, moving, stationary, land, maritime threats. JAGM will additionally provide robust capability in adverse weather day or night and in obscured/countermeasure environments. The JAGM Increment 1 system will replace aviation-launched; tube-launched, optically-tracked, wire-guided, and Helicopter Launched Fire-&-Forget Missile System (HELLFIRE). Later increments of JAGM will be fixed wing compatible. JAGM is an Army-led joint program that addresses rotary wing, fixed wing and unmanned aerial vehicle requirements. The Department of Navy threshold platform is the AH-1Z. The JAGM system includes missile, trainers, container, support equipment and software modifications to the M-299 launcher.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: JAGM Engineering and Manufacturing Development (EMD) Phase	25.640	17.880	15.473	0.000	15.473
Articles:	8	-	-	-	-
FY 2016 Accomplishments: FY 2016 funding supports AH-1Z software development, test and integration, platform airworthiness analysis/ testing, test planning/execution, procurement of test and integration hardware, acquisition and buildup of test articles, future technology insertion, and joint cost and schedule planning for EMD, Milestone C and Low Rate Initial Production (LRIP).					
FY 2017 Plans: FY 2017 plans include continued execution of EMD phase and AH-1Z integration activities, including continued airworthiness certification and software development. AH-1Z software development and test efforts will continue in support of fleet software release planned for the FY 2020 Initial Operational Capability (IOC).					
FY 2018 Base Plans: FY 2018 plans include continued execution of EMD phase and AH-1Z integration activities, including continued airworthiness certification, software development, fixed wing studies & analysis, Developmental Testing (DT), Integration Testing (IT), and a planned DT assist period to support Milestone C. AH-1Z software development					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605450N / *Joint Air-to-ground Missile (JAGM)*	**Project (Number/Name)** 2211 / *Joint Air-to-Ground Missile*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and test efforts will continue in support of fleet software release planned for the FY 2020 Initial Operational Capability (IOC). ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	25.640	17.880	15.473	0.000	15.473

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E ARMY, 0605450A: *JAGM*	83.100	43.000	34.600	-	34.600	11.900	3.000	2.000	0.000	Continuing	Continuing
• MPA, ARMY, C70302: *JAGM*	27.738	101.851	178.400	-	178.400	253.118	211.806	292.770	186.931	3,433.500	4,686.114
• WPN, NAVY, 2248: *JAGM*	0.000	26.200	3.789	-	3.789	24.374	24.379	49.872	50.869	1,375.405	1,554.888

Remarks

D. Acquisition Strategy

The Joint Air-to-Ground Missile (JAGM) system is an ACAT-1D Joint Army/Navy Major Defense Acquisition Program (MDAP) with the Army designated as lead service. Milestone B was achieved in July 2015 with Milestone C planned for 3QFY 2018. The Engineering, Manufacturing and Development contract was a full and open competition and was awarded July 2015. The vendor, Lockheed Martin, is responsible for the production of a technically mature and fully producible JAGM Guidance Section (GS) as well as the integration of the GS with the current HELLFIRE-R missile warhead and motor section for Increment 1 capability. The Army is responsible for the development and production of the JAGM missile and integration on the AH-64 Apache. The Navy is responsible for integration of the JAGM on the United States Marine Corps AH-1Z with an Initial Operational Capability (IOC) in FY 2020.

E. Performance Metrics

Milestone C in FY 2018; IOC in FY 2020

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605450N / *Joint Air-to-ground Missile (JAGM)*	Project (Number/Name) 2211 / *Joint Air-to-Ground Missile*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCWD : China Lake, CA	46.931	2.541	Nov 2015	1.907	Nov 2016	1.014	Nov 2017	-		1.014	2.700	55.093	-
Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.605	0.997	Nov 2015	0.637	Dec 2016	0.459	Nov 2017	-		0.459	1.299	3.997	-
Aircraft Integration	WR	NAWCAD : Patuxent River, MD	9.098	0.739	Nov 2015	0.600	Dec 2016	0.563	Nov 2017	-		0.563	0.524	11.524	-
Aircraft Integration (AH-1Z)	Various	NAWCWD : China Lake, CA	3.418	2.800	Nov 2015	2.191	Mar 2017	2.040	Nov 2017	-		2.040	5.479	15.928	-
Contractor Aircraft Integration (AH-1Z)	Various	Northrup Grumman : Woodlawn Hills, CA	0.000	4.958	Nov 2016	7.601	Jul 2017	3.436	Jul 2018	-		3.436	0.000	15.995	-
Integration & Test	Various	JAMS : Huntsville, AL	25.801	3.169	Mar 2016	1.484	Mar 2017	1.576	Jan 2018	-		1.576	1.716	33.746	-
Contractor Integration & Test	C/FPIF	Lockheed Martin : Orlando, FL	4.300	8.648	Mar 2016	0.500	Feb 2017	0.000		-		0.000	0.000	13.448	13.448
Studies and Analysis	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		0.600	Nov 2017	-		0.600	0.200	0.800	-
Prior year cost Prod Dev no longer funded in the FYDP	Various	Various : Various	11.555	0.000		0.000		0.000		-		0.000	0.000	11.555	-
		Subtotal	101.708	23.852		14.920		9.688		-		9.688	11.918	162.086	-

Remarks

Contractor Aircraft Integration (AH-1Z) - Funding in this line includes software support associated with the integration of JAGM on the AH-1Z.
Integration & Test - Funding in this line includes integration & test support, modeling & simulation and telemetry kits.
Contractor Integration & Test - Funding in this line includes hardware and support associated with the Engineering and Manufacturing Development (EMD) contract.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support	WR	NAWCWD : China Lake, CA	0.030	0.218	Mar 2016	0.452	Nov 2016	0.163	Nov 2017	-		0.163	0.278	1.141	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605450N / *Joint Air-to-ground Missile (JAGM)*	Project (Number/Name) 2211 / *Joint Air-to-Ground Missile*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	0.000	0.087	Mar 2016	0.075	Dec 2016	0.076	Nov 2017	-		0.076	0.153	0.391	-
Prior year Support cost no longer funded in the FYDP	Various	Various : Various	12.447	0.000		0.000		0.000		-		0.000	0.000	12.447	-
		Subtotal	12.477	0.305		0.527		0.239		-		0.239	0.431	13.979	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation	Various	NAWCAD : Patuxent River, MD	3.786	0.329	Apr 2016	0.930	Mar 2017	0.451	Nov 2017	-		0.451	1.958	7.454	-
Test & Evaluation	Various	NAWCWD : China Lake, CA	0.000	0.000		0.000		2.043	Nov 2017	-		2.043	0.127	2.170	-
Test & Evaluation	Various	USAF : Eglin AFB, FL	0.000	0.000		0.000		1.121	Dec 2017	-		1.121	0.296	1.417	-
Test & Evaluation	Various	Various : Various	0.000	0.000		0.235	Nov 2016	0.639	Nov 2017	-		0.639	0.000	0.874	-
Prior year T&E cost no longer funded in the FYDP	Various	Various : Various	41.328	0.000		0.000		0.000		-		0.000	0.000	41.328	-
		Subtotal	45.114	0.329		1.165		4.254		-		4.254	2.381	53.243	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contr Eng Supt - ETS (NONFFRDC)	Various	Various : Various	1.926	0.927	Nov 2015	0.918	Feb 2017	0.936	Feb 2018	-		0.936	0.808	5.515	-
Management Services	Various	NAWCAD : Patuxent River, MD	14.119	0.154	Dec 2015	0.290	Nov 2016	0.296	Nov 2017	-		0.296	0.592	15.451	-
Travel	Various	NAWCAD : Patuxent River, MD	0.462	0.073	Oct 2015	0.060	Oct 2016	0.060	Oct 2017	-		0.060	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605450N / *Joint Air-to-ground Missile (JAGM)*	**Project (Number/Name)** 2211 / *Joint Air-to-Ground Missile*

Management Services ($ in Millions)

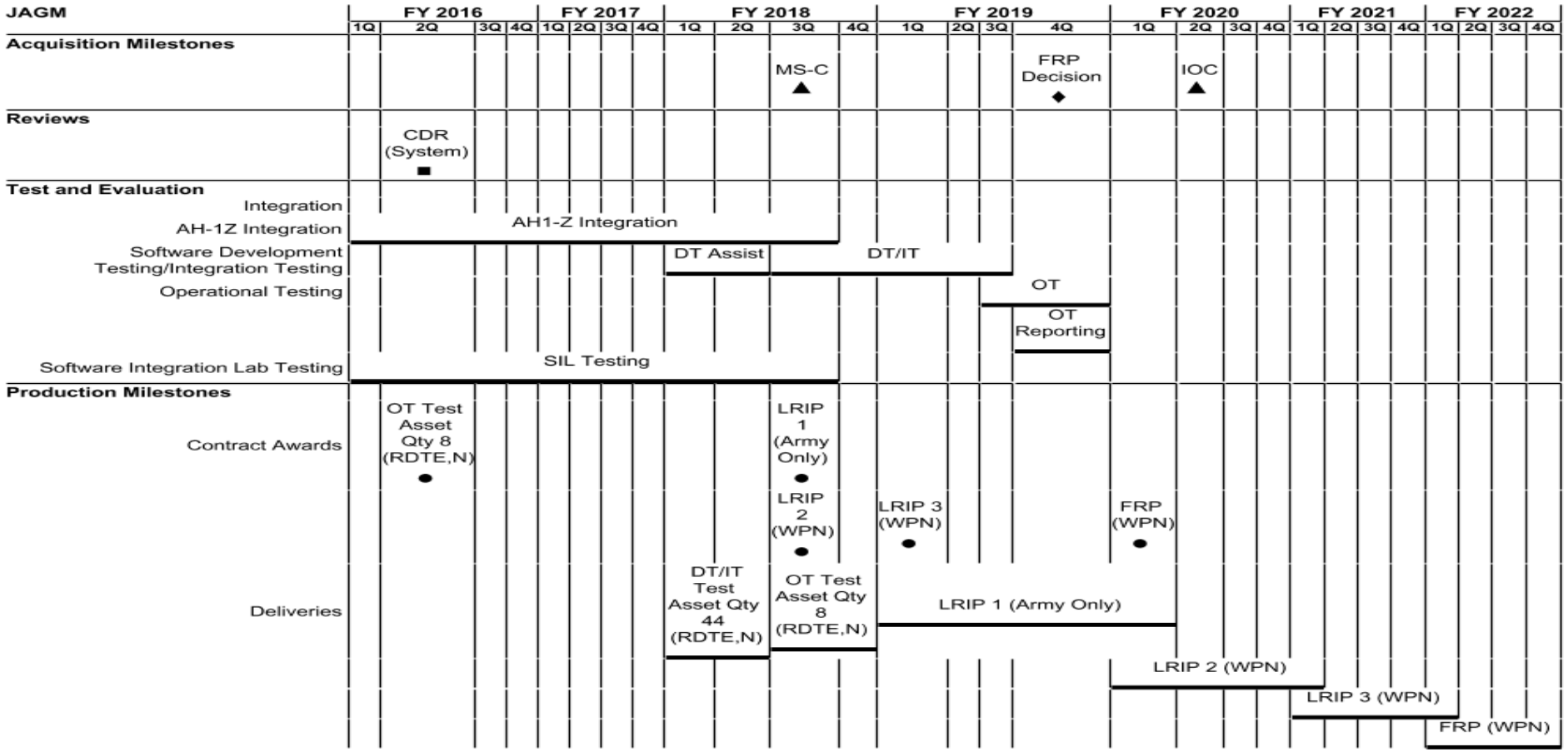
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior year Mngt Svcs cost no longer funded in the FYDP	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	16.507	1.154		1.268		1.292		-		1.292	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	175.806	25.640		17.880		15.473		-		15.473	-	-	-

Remarks

1) Program acquisition milestones (minus unique Initial Operating Capability) and production milestones are joint program milestones for both Army and Navy.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605450N / *Joint Air-to-ground Missile (JAGM)*	**Project (Number/Name)** 2211 / *Joint Air-to-Ground Missile*



2018PB - 0605450N - 2211

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605450N / *Joint Air-to-ground Missile (JAGM)*	**Project (Number/Name)** 2211 / *Joint Air-to-Ground Missile*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
JAGM				
Acquisition Milestones: Milestone C	3	2018	3	2018
Acquisition Milestones: IOC	2	2020	2	2020
Acquisition Milestones: FRP Decision	4	2019	4	2019
Reviews: CDR (System)	2	2016	2	2016
Test and Evaluation: AH-1Z Integration: AH-1Z Integration	1	2016	3	2018
Test and Evaluation: Software Development Testing/Integration Testing: DT Assist	1	2018	2	2018
Test and Evaluation: Software Development Testing/Integration Testing: DT/IT	3	2018	3	2019
Test and Evaluation: Operational Testing: OT	3	2019	4	2019
Test and Evaluation: Operational Testing: OT Reporting	4	2019	4	2019
Test and Evaluation: Software Integration Lab Testing: SIL Testing	1	2016	3	2018
Production Milestones: Contract Awards: OT Test Asset	2	2016	2	2016
Production Milestones: Contract Awards: LRIP 1 (Army Only)	3	2018	3	2018
Production Milestones: Contract Awards: LRIP 2 (WPN)	3	2018	3	2018
Production Milestones: Contract Awards: LRIP 3 (WPN)	1	2019	1	2019
Production Milestones: Contract Awards: FRP (WPN)	1	2020	1	2020
Production Milestones: Deliveries: DT/IT Test Asset	1	2018	2	2018
Production Milestones: Deliveries: OT Test Asset	3	2018	4	2018
Production Milestones: Deliveries: LRIP 1 (Army Only)	1	2019	1	2020
Production Milestones: Deliveries: LRIP 2 (WPN)	1	2020	1	2021
Production Milestones: Deliveries: LRIP 3 (WPN)	1	2021	1	2022
Production Milestones: Deliveries: FRP (WPN)	1	2022	4	2022

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605500N *I Multi-mssn Maritime Aircraft (MMA) (P-8A)*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	8,071.080	151.472	59.126	11.795	-	11.795	19.687	10.353	10.563	10.774	Continuing	Continuing
2696: *Multi-Mission Maritime Aircraft*	7,760.798	99.523	57.119	8.995	-	8.995	9.527	0.000	0.000	0.000	0.000	7,935.962
3181: *P-8A Spiral One Development*	242.910	38.389	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	281.299
3368: *P-8 Improvements*	0.000	1.491	2.007	2.800	-	2.800	10.160	10.353	10.563	10.774	Continuing	Continuing
9999: *Congressional Adds*	67.372	12.069	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	79.441
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 334												

A. Mission Description and Budget Item Justification

The P-8A Multi-mission Maritime Aircraft will replace the aging P-3 aircraft. The P-8A program was initiated in response to the Joint Requirements Oversight Council (JROC) validated Mission Needs Statement, "Broad Area Maritime and Littoral Armed Intelligence, Surveillance and Reconnaissance" and the requirements for the program are defined in the P-8A Capability Production Document #791-88-09, validated and approved on 22 June 2009. A successful Critical Design Review was completed in June 2007. In August 2007 the Design Readiness Review was conducted and resulted in approval to obligate funding for the fabrication of the Stage II flight test aircraft. The first flight of P-8A occurred on 25 Apr 2009. Milestone (MS) C was successfully completed on 11 August 2010. The program completed Initial Operational Test and Evaluation (IOT&E) in March 2013 and achieved Initial Operational Capability (IOC) in November 2013. The Acquisition Decision Memorandum approved entry into Full Rate Production on January 3, 2014.

The primary objectives of Systems Development and Demonstration (SDD) are to perform the system detailed design, develop and produce Systems Integration Labs, develop and build ground and flight test articles, and conduct ground and flight tests to successfully achieve program milestones. Ground testing includes the conduct of static testing, fatigue testing and Live Fire Test and Evaluation. Six flight test aircraft have been built during SDD (PU 2696). These test aircraft are grouped into two stages based on which phase of the test program the aircraft will support. SDD Stage I flight test aircraft (FY06/Qty-3) support Integrated Test and Evaluation (IT&E). SDD Stage II flight test aircraft (FY09/Qty-3) supported the completion of IT&E and Initial Operational Test and Evaluation (IOT&E) after being updated to the production configuration. The SDD contract includes the development and initial building of training devices to support IOT&E. The scope of SDD includes activities necessary to facilitate an efficient transition of the fleet to achieve the P-8A Initial Operational Capability (IOC) of SDD (PU 2696) in CY13. The scope of SDD also includes the engineering and verification of corrected deficiencies identified in testing and Fleet operational use. P-8A entered Production and Deployment phase in the 4th quarter of FY10 and entered Full Rate Production in 2nd quarter of FY14.

P-8A program is based on an evolutionary acquisition strategy consisting of sequential incremental enhancements to system capabilities that will retain cost-wise effectiveness for winning major combat operations. In order to pace the threat, Spiral One (Increment 2), the Next Phase of Capabilities, will incorporate the following capabilities into the P-8A: Multi-Static Active Coherent (MAC), Automatic Identification System, Rapid Capabilities Insertion (RCI), updates to the Tactical Operations

Center (TOC), as well as additional Anti-Submarine Warfare (ASW), Anti-Surface Warfare (ASuW) and Intelligence Surveillance and Reconnaissance capabilities as Engineering Change Proposals (ECPs). The scope of this effort includes the integration, design, ground testing (lab & aircraft) and flight test of the capability enhancements to the P-8A and associated Tactical Operations Center ground support facilities and initial trainers. Integration and test of these capabilities as well as integration of Advanced Airborne Sensor (AAS) capability will be accomplished incrementally, based on the scope of the integration effort. This includes support of Special Mission Configuration Test Program (SMCTP).

The P-8A Spiral Two (Increment 3) program consist of sequential incremental enhancements to system capabilities that will retain cost-wise effectiveness for major combat operations. Increment 3 will incorporate improvements to aircraft systems including Combat System architecture improvements, ASW and ASuW sensor improvements, communication capability upgrades, ASuW Net Enabled Weapon (NEW), Higher-Than-Secret (HTS) security capability, and High Altitude ASW Weapons Capability (HAAWC) with datalink. Increment 3 has transferred from this PE 0605500N to PE 0605504N.

The P-8A Multi-mission Maritime Aircraft (MMA) program also includes a sequence of RCI's and rapid development efforts to respond to evolving threats which will retain cost-wise effectiveness for winning major combat operations. In order to pace the threat, these efforts will incorporate incremental software and hardware improvements to existing sensors, communications systems, mission systems, weapons capabilities and Tactical Operations Center (TOC) to build on the P-8A capability baseline. These capabilities, and other emergent capability requirements, will be prioritized through the Navy Integration and Interoperability (I&I)-aligned Capability Prioritization Process (CPP) and P-8A Tier 3 Capability Roadmap. The CPP process will be supported by detailed analysis and the maturation of developing technologies.

Budget Activity 5.
JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	156.293	59.126	21.861	-	21.861
Current President's Budget	151.472	59.126	11.795	-	11.795
Total Adjustments	-4.821	0.000	-10.066	-	-10.066
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.001	0.000			
• SBIR/STTR Transfer	-4.821	0.000			
• Program Adjustments	0.000	0.000	-10.098	-	-10.098
• Rate/Misc Adjustments	0.001	0.000	0.032	-	0.032

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605500N *I Multi-mssn Maritime Aircraft (MMA) (P-8A)*

Congressional Add Details ($ in Millions, and Includes General Reductions)

	FY 2016	FY 2017
Project: 9999: *Congressional Adds*		
Congressional Add: *Small Business Technology Insertion*	12.069	0.000
Congressional Add Subtotals for Project: 9999	12.069	0.000
Congressional Add Totals for all Projects	12.069	0.000

Change Summary Explanation

Technical: Not applicable.

Schedule:
Project 2696: In order to clarify and better portray the actual work being performed, divided Fatigue Testing / Air to Air Refueling (AAR) into Fatigue Testing and AAR Testing and added AAR Analysis & Initial Fielding and Fatigue Analysis events.

One (1) additional FY14 (FRP 1) funded aircraft (total 17) and one (1) FY16 (FRP 3) funded aircraft (total 17) were procured via the FY16 Lot 7 contract as a result of The Department of the Navy's Congressional Notification of the use of Buy to Budget authority under 10 U.S.C. 2308. Because these aircraft did not include any Advanced Procurement funding, the delivery schedules extend beyond the planned 12 month period applicable for the remainder of the FY16 (FRP 3) aircraft. The FY14 (FRP 1) funded aircraft will deliver in February 2019

Project 3218: Funding transferred from PE 0605500N to PE 0605504N.

Project 3368: In order to clarify and better portray the actual work being performed, added RCI-4 / MAC Processing Improvements and RCI-4 Theatre ASW Interoperability Improvements events.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	Project (Number/Name) 2696 / *Multi-Mission Maritime Aircraft*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2696: *Multi-Mission Maritime Aircraft*	7,760.798	99.523	57.119	8.995	-	8.995	9.527	0.000	0.000	0.000	0.000	7,935.962
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 334

A. Mission Description and Budget Item Justification

The P-8A Multi-mission Maritime Aircraft (MMA) will replace the aging P-3 aircraft. The P-8A program was initiated in response to the Joint Requirements Oversight Council (JROC) validated Mission Needs Statement (MNS), "Broad Area Maritime and Littoral Armed Intelligence, Surveillance and Reconnaissance" and the requirements for the program are defined in the P-8A Capability Production Document (CPD) #791-88-09, validated and approved on 22 June 2009. A successful Critical Design Review was completed in June 2007. In August 2007 the Design Readiness Review was conducted and resulted in approval to obligate funding for the fabrication of the Stage II flight test aircraft. The first flight of P-8A occurred on 25 Apr 2009. Milestone (MS) C was successfully completed on 11 August 2010. The program completed Initial Operational Test and Evaluation (IOT&E) in March 2013 and achieved Initial Operational Capability (IOC) in November 2013. The Acquisition Decision Memorandum approved entry into Full Rate Production on January 3, 2014.

The primary objectives of Systems Development and Demonstration (SDD) are to perform the system detailed design, develop and produce Systems Integration Labs, develop and build ground and flight test articles, and conduct ground and flight tests to successfully achieve program milestones. Ground testing includes the conduct of static testing, fatigue testing and Live Fire Test and Evaluation. Six flight test aircraft have been built during SDD. These test aircraft are grouped into two stages based on which phase of the test program the aircraft will support. SDD Stage I flight test aircraft (FY06/Qty-3) support Integrated Test and Evaluation (IT&E). SDD Stage II flight test aircraft (FY09/Qty-3) supported the completion of IT&E and Initial Operational Test and Evaluation (IOT&E) after being updated to the production configuration. The SDD contract includes the development and initial building of training devices to support IOT&E. The scope of SDD includes activities necessary to facilitate an efficient transition of the fleet to achieve the P-8A Initial Operational Capability (IOC) of SDD (PU 2696) in CY13. The scope of SDD also includes the engineering and verification of corrected deficiencies identified in testing and Fleet operational use and the baseline air to air refueling. P-8A entered Production and Deployment phase in the 4th quarter of FY10 and entered Full Rate Production in 2nd quarter of FY14.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Continue System Development & Demonstration	79.012	53.175	8.410	0.000	8.410
Articles:	-	-	-	-	-
FY 2016 Accomplishments: SDD phase. Scope of effort included: engineering for identified and prioritized deficiencies; supporting and updating ground and flight test articles (Stage I and II); completed Horizontal Stabilizer (H-Stab) fatigue and					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	**Project (Number/Name)** 2696 / *Multi-Mission Maritime Aircraft*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
residual strength testing; conducted Air to Air Refueling (AAR) ground and developmental flight testing and Second Lifetime Full-Scale Fatigue Test cycling. ***FY 2017 Plans:*** SDD phase. Scope of effort includes: support and update to ground and flight test articles (Stage I and II); continuation of Third Lifetime Full-Scale Fatigue Test cycling; AAR Operational Test, analysis, and fielding of capability. ***FY 2018 Base Plans:*** SDD phase. Scope of effort includes: support and update to ground and flight test articles (Stage I and II), continuation of Third Lifetime Full-Scale Fatigue Test analysis and completion of H-Stab static testing analysis. ***FY 2018 OCO Plans:*** N/A					
Title: Continue Engineering and Technical Development and Test for Sys Dev & Demonstration contracts	20.511	3.944	0.585	0.000	0.585
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued analysis of contracted deliverables; directed technical and logistic support of system development test aircraft; completed third period of Follow-On Test and Evaluation FOT&E and VCD, AAR ground and developmental flight testing; H-Stab fatigue and residual strength testing and Second Lifetime Full Scale Fatigue Test cycling completed; evaluated contract cost, schedule, and performance; conducted test preparations; provided necessary government furnished equipment and test articles; performed risk assessment/mitigation, program control, and performance status. ***FY 2017 Plans:*** Continue analysis of contracted deliverables; direct technical and logistic support of system development test aircraft; Air to Air Refueling operational testing; fatigue testing; complete H-Stab static testing and Third Lifetime Full Scale Fatigue Test cycling; evaluate contract cost, schedule, and performance; test preparations, provide necessary government furnished equipment and test articles, risk assessment/mitigation; program control; and performance status. Conduct and support IT&E and FOT&E/VCD. ***FY 2018 Base Plans:*** Continue analysis of contracted deliverables; direct technical and logistic support of system development test aircraft; conduct fatigue analysis and delivery of reports; evaluate contract cost, schedule, and performance; test					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	**Project (Number/Name)** 2696 / *Multi-Mission Maritime Aircraft*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
preparations, provide necessary government furnished equipment and test articles, risk assessment/mitigation; program control; and performance status. Conduct and support IT&E and FOT&E/VCD. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	99.523	57.119	8.995	0.000	8.995

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN1/0193: *P-8A MMA*	3,224.333	2,983.378	1,385.584	-	1,385.584	1,574.151	1,121.668	97.000	0.000	0.000	24,186.710
• APN6/0605: *P-8A Initial Spares*	6.915	44.700	33.063	-	33.063	27.447	0.000	0.000	0.000	0.000	539.886
• MILCON: *P-8A MILCON*	82.418	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	342.759

Remarks

D. Acquisition Strategy

The MMA Milestone 0 was approved 22 March 2000 and the resulting Acquisition Decision Memorandum directed P-8A to begin the Concept Exploration phase consisting of an Analysis of Alternatives and industry concept studies. These activities began 3Q/01 and were funded under Program Element 0702207N Project Unit W2737. Approval to enter Component Advance Development (CAD) was attained from the Overarching Integrated Product Team on 18 Jan 2002 and the Milestone Decision Authority Under Secretary of Defense for Acquisition, Technology, & Logistics approved the program Acquisition Strategy on 8 Feb 2002. The CAD was a competitive award to multiple contractors to define alternative MMA concept system architectures and evaluate associated risks and proposed mitigations. Selection of MMA concept and approval to enter SDD phase occurred at MS B decision review on 28 May 2004. The contract was awarded to Boeing on 14 June 2004. The SDD phase is being used to design, develop and test the P-8A system. The P-8A program was initiated in response to the Joint Requirements Oversight Council validated Mission Needs Statement, "Broad Area Maritime and Littoral Armed Intelligence, Surveillance and Reconnaissance" and the requirements for the program are defined in the Capability Production Document. MS C was successfully completed on 11 August 2010 approving entry into the Production and Deployment Phase. P-8A Initial Operational Capability achieved in November 2013. Entry into Full Rate Production was approved on 3 January 2014.

E. Performance Metrics

Completed first period of Follow-On Test & Evaluation (FOT&E) and Verification of Corrected Deficiencies (VCD) in 2nd quarter 2014. Completed second and third FOT&E and VCD Feb 2015 and Dec 2015. Completed Air to Air Refueling (AAR) ground and developmental flight testing, H-Stab fatigue and residual strength testing, and Second Lifetime Full- Scale Fatigue Test cycling in FY16. H-Stab static and AAR operational test will be completed in FY17.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	Project (Number/Name) 2696 / *Multi-Mission Maritime Aircraft*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary HW Dev - Boeing	C/CPAF	Boeing : Seattle, WA	6,874.899	76.649	Mar 2016	52.081	Oct 2016	7.751	Oct 2017	-		7.751	8.954	7,020.334	7,020.334
Sys Eng (gov)	WR	NAWC AD : Pax River, MD	76.386	5.890	Dec 2015	1.094	Nov 2016	0.659	Nov 2017	-		0.659	0.000	84.029	-
Prior year Prod Dev cost no longer funded in the FYDP	Various	Various : Various	319.530	0.000		0.000		0.000		-		0.000	0.000	319.530	-
		Subtotal	7,270.815	82.539		53.175		8.410		-		8.410	8.954	7,423.893	-

Remarks

The total award fee issued to date is 2.6% of the total budget.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Int. Log Gov	WR	NAWC AD : Pax River, MD	43.718	0.200	Dec 2015	0.086	Nov 2016	0.000		-		0.000	0.000	44.004	-
Tech Dev Gov	WR	NAWC AD : Pax River, MD	76.093	0.998	Dec 2015	0.162	Nov 2016	0.162	Nov 2017	-		0.162	0.165	77.580	-
Prior year Support cost no longer funded in the FYDP	Various	Various : Various	31.369	0.000		0.000		0.000		-		0.000	0.000	31.369	-
		Subtotal	151.180	1.198		0.248		0.162		-		0.162	0.165	152.953	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Dev T&E - Gov	WR	NAWC AD : Pax River, MD	93.398	5.996	Dec 2015	1.525	Nov 2016	0.000		-		0.000	0.000	100.919	-
GFE & GFI	WR	NAWC AD : Pax River, MD	85.036	4.508	Nov 2015	0.821	Nov 2016	0.000		-		0.000	0.000	90.365	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	Project (Number/Name) 2696 / *Multi-Mission Maritime Aircraft*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Oper Test & Eval	WR	NAWC AD : Pax River, MD	6.284	0.358	Nov 2015	0.416	Nov 2016	0.000		-		0.000	0.000	7.058	-
Prior year T&E cost no longer funded in the FYDP	Various	Various : Various	39.471	0.000		0.000		0.000		-		0.000	0.000	39.471	-
		Subtotal	224.189	10.862		2.762		0.000		-		0.000	0.000	237.813	-

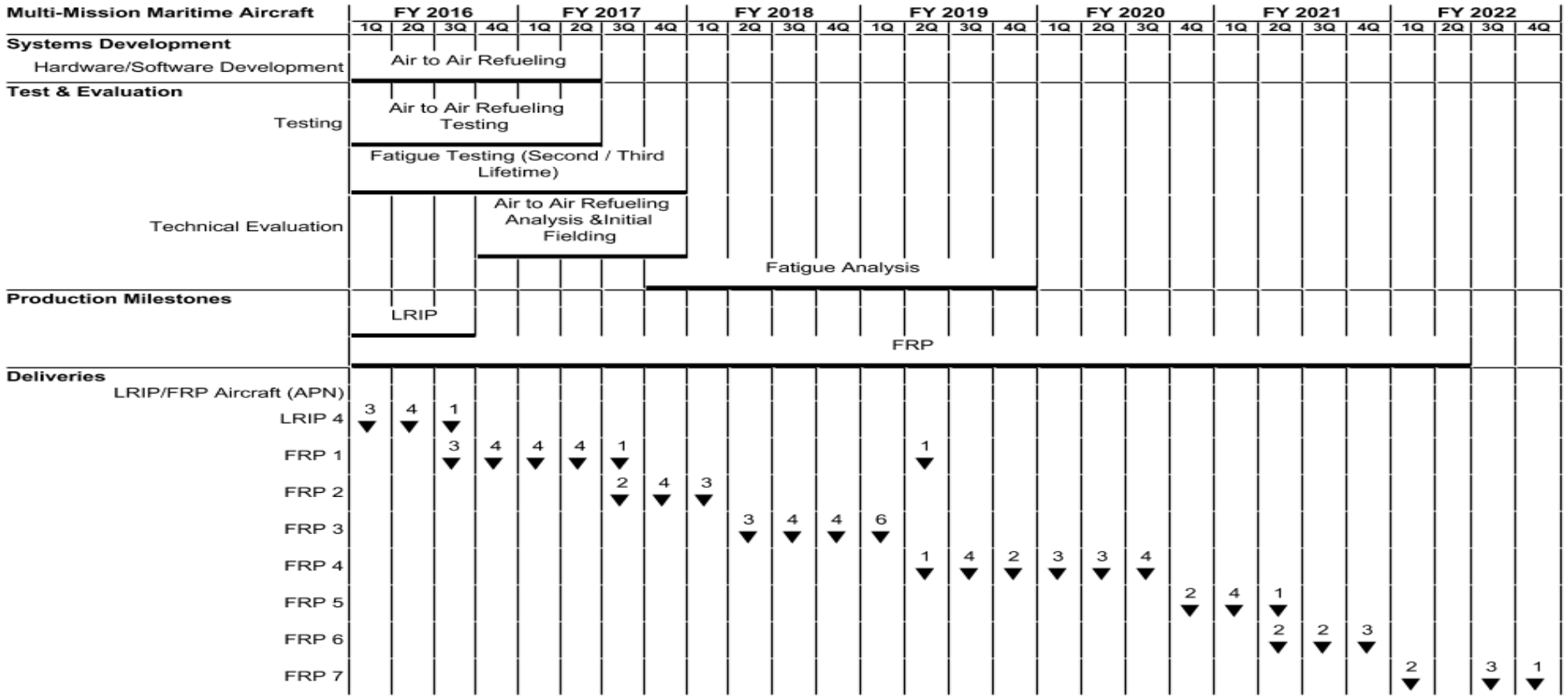
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Mgmt Suppt Serv (NON-FFRDC)	C/CPFF	RBC INC : Alexandria, VA	30.099	1.820	Dec 2015	0.311	Nov 2016	0.000		-		0.000	0.000	32.230	32.230
Eng Tech Serv (NON-FFRDC)	C/CPFF	ASEC : Lexington Park MD	11.145	0.308	Mar 2016	0.200	Nov 2016	0.000		-		0.000	0.000	11.653	11.653
Program Mgmt Support	WR	NAWC AD : Pax River, MD	49.178	2.476	Dec 2015	0.360	Nov 2016	0.360	Nov 2017	-		0.360	0.358	52.732	-
Travel	Allot	NAWC AD : Pax River, MD	3.834	0.320	Dec 2015	0.063	Nov 2016	0.063	Nov 2017	-		0.063	0.050	4.330	-
Prior year Mgmt cost no longer funded in the FYDP	Various	Various : Various	20.358	0.000		0.000		0.000		-		0.000	0.000	20.358	-
		Subtotal	114.614	4.924		0.934		0.423		-		0.423	0.408	121.303	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	7,760.798	99.523		57.119		8.995		-		8.995	9.527	7,935.962	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	**Project (Number/Name)** 2696 / *Multi-Mission Maritime Aircraft*



2018OSD - 0605500N - 2696

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	**Project (Number/Name)** 2696 / *Multi-Mission Maritime Aircraft*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Multi-Mission Maritime Aircraft				
Systems Development: Hardware/Software Development: Air to Air Refueling	1	2016	2	2017
Test & Evaluation: Testing: Air to Air Refueling Testing	1	2016	2	2017
Test & Evaluation: Testing: Fatigue Testing (Second / Third Lifetime)	1	2016	4	2017
Test & Evaluation: Technical Evaluation: Air to Air Refueling Analysis & Initial Fielding	4	2016	4	2017
Test & Evaluation: Technical Evaluation: Fatigue Analysis	4	2017	4	2019
Production Milestones: Low Rate Initial Production (LRIP)	1	2016	3	2016
Production Milestones: Full Rate Production (FRP)	1	2016	2	2022
Deliveries: LRIP 4: LRIP Aircraft (APN) Q1 2016	1	2016	1	2016
Deliveries: LRIP 4: LRIP Aircraft (APN) Q2 2016	2	2016	2	2016
Deliveries: LRIP 4: LRIP Aircraft (APN) Q3 2016	3	2016	3	2016
Deliveries: FRP 1: FRP Aircraft (APN) Q3 2016	3	2016	3	2016
Deliveries: FRP 1: FRP Aircraft (APN) Q4 2016	4	2016	4	2016
Deliveries: FRP 1: FRP Aircraft (APN) Q1 2017	1	2017	1	2017
Deliveries: FRP 1: FRP Aircraft (APN) Q2 2017	2	2017	2	2017
Deliveries: FRP 1: FRP Aircraft (APN) Q3 2017	3	2017	3	2017
Deliveries: FRP 1: FRP Aircraft (APN) Q2 2019	2	2019	2	2019
Deliveries: FRP 2: FRP Aircraft (APN) Q3 2017	3	2017	3	2017
Deliveries: FRP 2: FRP Aircraft (APN) Q4 2017	4	2017	4	2017
Deliveries: FRP 2: FRP Aircraft (APN) Q1 2018	1	2018	1	2018
Deliveries: FRP 3: FRP Aircraft (APN) Q2 2018	2	2018	2	2018
Deliveries: FRP 3: FRP Aircraft (APN) Q3 2018	3	2018	3	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	**Project (Number/Name)** 2696 / *Multi-Mission Maritime Aircraft*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Deliveries: FRP 3: FRP Aircraft (APN) Q4 2018	4	2018	4	2018
Deliveries: FRP 3: FRP Aircraft (APN) Q1 2019	1	2019	1	2019
Deliveries: FRP 4: FRP Aircraft (APN) Q2 2019	2	2019	2	2019
Deliveries: FRP 4: FRP Aircraft (APN) Q3 2019	3	2019	3	2019
Deliveries: FRP 4: FRP Aircraft (APN) Q4 2019	4	2019	4	2019
Deliveries: FRP 4: FRP Aircraft (APN) Q1 2020	1	2020	1	2020
Deliveries: FRP 4: FRP Aircraft (APN) Q2 2020	2	2020	2	2020
Deliveries: FRP 4: FRP Aircraft (APN) Q3 2020	3	2020	3	2020
Deliveries: FRP 5: FRP Aircraft (APN) Q4 2020	4	2020	4	2020
Deliveries: FRP 5: FRP Aircraft (APN) Q1 2021	1	2021	1	2021
Deliveries: FRP 5: FRP Aircraft (APN) Q2 2021	2	2021	2	2021
Deliveries: FRP 6: FRP Aircraft (APN) Q2 2021	2	2021	2	2021
Deliveries: FRP 6: FRP Aircraft (APN) Q3 2021	3	2021	3	2021
Deliveries: FRP 6: FRP Aircraft (APN) Q4 2021	4	2021	4	2021
Deliveries: FRP 7: FRP Aircraft (APN) Q1 2022	1	2022	1	2022
Deliveries: FRP 7: FRP Aircraft (APN) Q3 2022	3	2022	3	2022
Deliveries: FRP 7: FRP Aircraft (APN) Q4 2022	4	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	Project (Number/Name) 3181 / *P-8A Spiral One Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3181: *P-8A Spiral One Development*	242.910	38.389	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	281.299
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 334

A. Mission Description and Budget Item Justification

The P-8A Multi-mission Maritime Aircraft (MMA) program is based on an evolutionary acquisition strategy consisting of sequential incremental enhancements to system capabilities that will retain cost-wise effectiveness for winning major combat operations. In order to pace the threat, Spiral One (Increment 2), the Next Phase of Capabilities (NPC-1), will incorporate the following capabilities into the P-8A: Multi-Static Active Coherent (MAC), Automatic Identification System (AIS), Rapid Capabilities Insertion (RCI), updates to the Tactical Operations Center (TOC), as well as additional Anti-Submarine Warfare (ASW), Anti-Surface Warfare (ASuW) and Intelligence Surveillance and Reconnaissance (ISR) capabilities. Increment 2 will be executed as an Engineering Change Proposal (ECP) to the baseline program.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Perform technology demonstrations and analyses of proposed new capabilities	30.472	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Completed development of integration design of new P-8A capabilities. Completed laboratory and development testing. Incrementally funded primary Integration/EMD contract for comprehensive design, installation, test and initial fielding of all Spiral One (Increment 2) capabilities such as MAC, AIS, and RCI. Maintained integration alignment with external development programs. Achieved ECP2 Initial Operational Capability. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Conduct technical, cost, risk and logistics analysis of proposed technologies	7.917	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	**Project (Number/Name)** 3181 / *P-8A Spiral One Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Completed technical, cost, risk and logistics analysis of proposed technologies. Completed technical and management support for the development of acquisition documentation. Completed engineering and management of technical development effort. Completed flight testing of Spiral One (Increment 2) capabilities. Completed technical and management support for the development of training courseware. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	38.389	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN5/0586: *P-8 Series*	28.092	18.836	18.665	-	18.665	186.990	215.321	212.427	210.566	2,146.725	3,079.903

Remarks

BLI0586 reflects the P-8A total program funding not just Increment 2

D. Acquisition Strategy

The P-8A MMA program is based on an evolutionary acquisition strategy consisting of sequential incremental enhancements to system capabilities that will retain cost-wise effectiveness for winning major combat operations. As part of the P-8A evolutionary acquisition strategy, Spiral One (Increment 2) will incorporate the capabilities defined in the Capability Development Document approved by JROC on 25 June 2010. Next Phase of Capabilities (NPC-1) will incorporate the following capabilities into the P-8A: Multi-Static Active Coherent, Rapid Capabilities Insertion, updates to the Tactical Operations Center, as well as additional Anti-Submarine Warfare, Anti-Surface Warfare and Intelligence Surveillance and Reconnaissance capabilities.

E. Performance Metrics

Approval of Spiral One (Increment 2) Engineering Change Proposals (ECPs). ECP 1 Fielded to the fleet in 4QFY15.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	Project (Number/Name) 3181 / *P-8A Spiral One Development*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary HW Dev - Integration/EMD	C/CPFF	Boeing : Seattle, WA	113.493	23.038	Oct 2015	0.000		0.000		-		0.000	0.000	136.531	136.531
Sys Eng (gov)	WR	NAWC AD : Pax River, MD	39.554	6.557	Nov 2015	0.000		0.000		-		0.000	0.000	46.111	-
Prior year Prod Dev cost no longer funded in the FYDP	Various	Various : Various	23.454	0.000		0.000		0.000		-		0.000	0.000	23.454	-
		Subtotal	176.501	29.595		0.000		0.000		-		0.000	0.000	206.096	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Sup	WR	NAWC AD : Pax River, MD	3.746	0.778	Nov 2015	0.000		0.000		-		0.000	0.000	4.524	-
Prior year Support cost no longer funded in the FYDP	Various	Various : Various	0.742	0.000		0.000		0.000		-		0.000	0.000	0.742	-
		Subtotal	4.488	0.778		0.000		0.000		-		0.000	0.000	5.266	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Dev Test & Eval	WR	NAWC AD : Pax River, MD	23.177	2.186	Nov 2015	0.000		0.000		-		0.000	0.000	25.363	-
GFE/GFI/GFP	WR	NAWC AD : Pax River, MD	20.728	2.741	Nov 2015	0.000		0.000		-		0.000	0.000	23.469	-
Oper Test & Eval	WR	NAWC AD : Pax River, MD	2.544	1.328	Nov 2015	0.000		0.000		-		0.000	0.000	3.872	-
		Subtotal	46.449	6.255		0.000		0.000		-		0.000	0.000	52.704	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	**Project (Number/Name)** 3181 / *P-8A Spiral One Development*

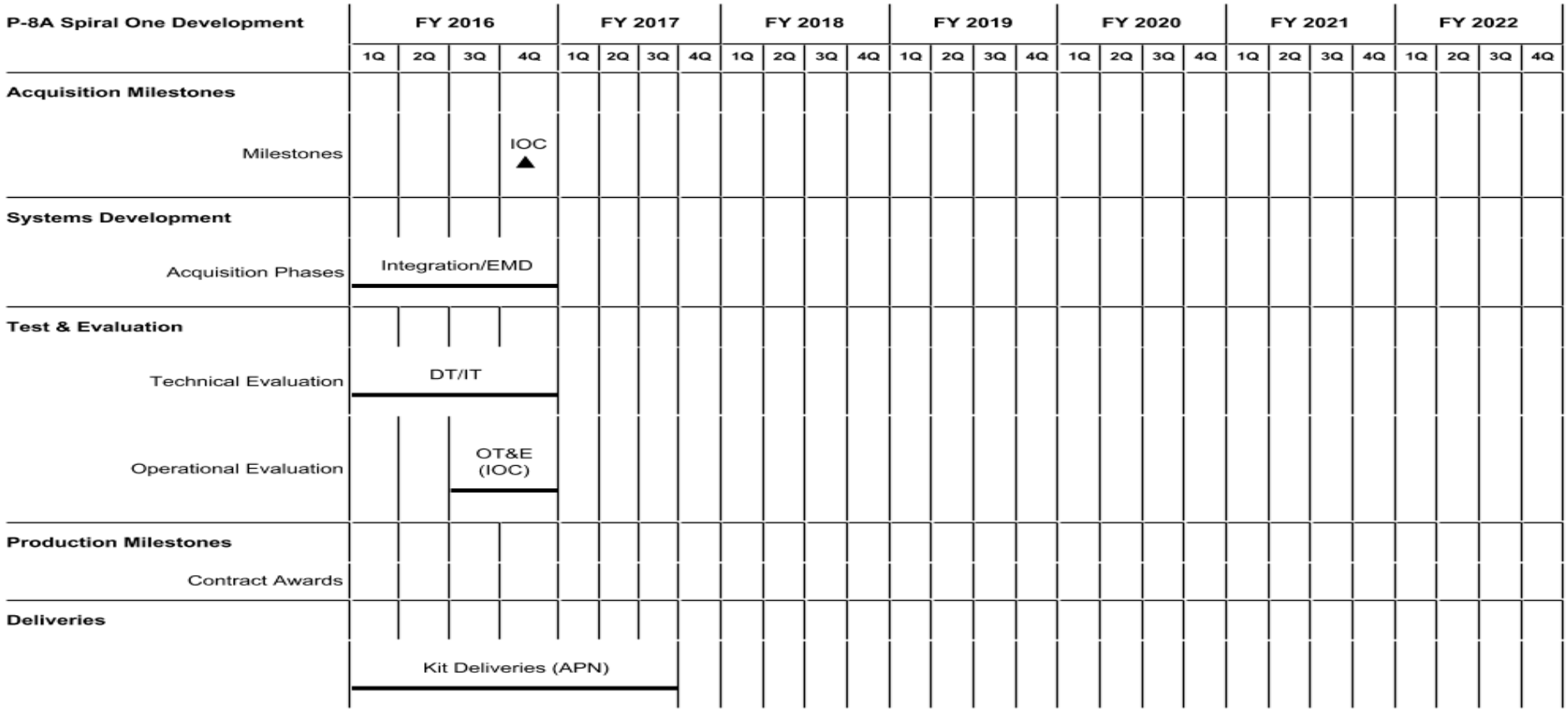
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Services	C/CPFF	ASEC : Lexington Park, MD	1.288	0.876	Nov 2015	0.000		0.000		-		0.000	0.000	2.164	2.164
Mgmt Suppt Serv (NON-FFRDC)	C/CPFF	RBC INC : Alexandria, VA	8.375	0.761	Dec 2015	0.000		0.000		-		0.000	0.000	9.136	9.136
Program Mgmt Support	WR	NAWC AD : Pax River, MD	5.593	0.124	Nov 2015	0.000		0.000		-		0.000	0.000	5.717	-
Travel	Allot	NAWC AD : Pax River, MD	0.216	0.000		0.000		0.000		-		0.000	0.000	0.216	-
		Subtotal	15.472	1.761		0.000		0.000		-		0.000	0.000	17.233	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	242.910	38.389		0.000		0.000		-		0.000	0.000	281.299	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	**Project (Number/Name)** 3181 / *P-8A Spiral One Development*



2018DON - 0605500N - 3181

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	**Project (Number/Name)** 3181 / *P-8A Spiral One Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
P-8A Spiral One Development				
Acquisition Milestones: Milestones: Initial Operational Capability (IOC)	4	2016	4	2016
Systems Development: Acquisition Phases: Integration/EMD	1	2016	4	2016
Test & Evaluation: Technical Evaluation: Developmental Testing (Integration Testing)	1	2016	4	2016
Test & Evaluation: Operational Evaluation: Operational Test & Evaluation (OT&E) (IOC)	3	2016	4	2016
Deliveries: Kit Deliveries (APN)	1	2016	3	2017

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	Project (Number/Name) 3368 / *P-8 Improvements*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3368: *P-8 Improvements*	0.000	1.491	2.007	2.800	-	2.800	10.160	10.353	10.563	10.774	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The P-8A Multi-mission Maritime Aircraft (MMA) program also includes a sequence of Rapid Capability Insertions (RCI) and rapid development efforts to respond to evolving threats which will retain cost-wise effectiveness for winning major combat operations. In order to pace the threat, these efforts will incorporate incremental software and hardware improvements to existing sensors, communications systems, mission systems, weapons capabilities and Tactical Operations Center (TOC)/ TACMobile to build on the P-8A capability baseline. These capabilities, and other emergent capability requirements, will be prioritized either through the Navy Integration and Interoperability (I&I)-aligned Capability Prioritization Process (CPP), P-8A Tier 3 Capability Roadmap and/or through an Urgent Operational Need. The CPP process will be supported by detailed analysis and the maturation of developing technologies.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Perform technology demonstrations and analyses of proposed new capabilities	1.170	1.582	2.338	0.000	2.338
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Commenced Development of Rapid Capability Insertions to incorporate incrementally software and hardware improvements to build on the existing P-8A Capability Baseline					
FY 2017 Plans: Develop Rapid Capability Insertions to incrementally incorporate software and hardware improvements to build on the existing P-8A Capability Baseline					
FY 2018 Base Plans: Develop Rapid Capability Insertions to incrementally incorporate software and hardware improvements to build on the existing P-8A Capability Baseline					
FY 2018 OCO Plans: N/A					
Title: Conduct technical, cost, risk and logistics analysis of proposed technologies	0.321	0.425	0.462	0.000	0.462
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	**Project (Number/Name)** 3368 / *P-8 Improvements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conducted technical, cost, risk and logistic analysis of proposed technologies. Evaluated system requirements through cost/performance trade off analysis. Provided technical and management support of the development of acquisition documentation. Provided engineering management of technical development effort. Increased the government role in prototyping ***FY 2017 Plans:*** Conduct technical, cost, risk and logistics analysis of proposed technologies. Evaluate system requirements through cost/performance trade-off analysis. Provide technical and management support for the development of acquisition documentation. Provide engineering and management of technical development effort. Increase in government led prototyping. ***FY 2018 Base Plans:*** Conduct technical, cost, risk and logistics analysis of proposed technologies. Evaluate system requirements through cost/performance trade-off analysis. Provide technical and management support for the development of acquisition documentation. Provide engineering and management of technical development effort. Increase in government led prototyping. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.491	2.007	2.800	0.000	2.800

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The P-8A Multi-mission Maritime Aircraft (MMA) program also includes a sequence of Rapid Capability Insertions (RCI) and rapid development efforts to respond to evolving threats which will retain cost-wise effectiveness for winning major combat operations beyond 2020. In order to pace the threat, these efforts will incorporate incremental software and hardware improvements to existing sensors, communications systems, mission systems, weapons capabilities and Tactical Operations Center (TOC) to build on the P-8A capability baseline. These capabilities, and other emergent capability requirements, will be prioritized through the Navy Integration and Interoperability (I&I)-aligned Capability Prioritization Process (CPP), P-8A Tier 3 Capability Roadmap and/or through an Urgent Operational Need. The CPP process will be supported by detailed analysis and the maturation of developing technologies.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	**Project (Number/Name)** 3368 / *P-8 Improvements*

E. Performance Metrics

Complete ABA prototyping on capabilities beyond Increment 3.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605500N / *Multi-mssn Maritime Aircraft (MMA) (P-8A)*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
9999: *Congressional Adds*	67.372	12.069	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	79.441
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Congressional Add.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017
Congressional Add: Small Business Technology Insertion	12.069	0.000
FY 2016 Accomplishments: N/A		
FY 2017 Plans: N/A		
Congressional Adds Subtotals	12.069	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Not required for Congressional Adds.

E. Performance Metrics

Not required for Congressional Adds.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605504N *I (U)Multi-Mission Maritime (MMA) Increment III*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	89.686	182.220	181.731	-	181.731	193.405	149.398	152.527	130.668	Continuing	Continuing
3218: *P-8A Spiral 2 Development*	0.000	89.686	182.220	181.731	-	181.731	193.405	149.398	152.527	130.668	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 334												

A. Mission Description and Budget Item Justification

The P-8A Increment 3 program consists of incremental enhancement Engineering Change Proposals (ECPs) to system capabilities that will retain cost-wise effectiveness for major combat operations. Increment 3 will incorporate improvements to aircraft systems including Combat System hardware and architecture improvements, Anti-Submarine Warfare (ASW) and Anti-Surface Warfare (ASuW) sensor improvements, communication capability upgrades, ASuW Net Enabled Weapon (NEW), Higher-Than-Secret (HTS) security capability and High Altitude ASW Weapons Capability (HAAWC) datalink.

These capabilities will be developed as a series of ECPs for the P-8A and are as follows:
- ECP 4 - Software upgrades to Narrowband SATCOM and Targeting.
- ECP 5 - Net Enabled Weapon, High Frequency radio Internet Protocol (HF-IP), Integrated Broadcast Service (IBS) filtering, IBS receiver, and Harpoon II+.
- ECP 6 - Applications Based Architecture (ABA) and Combat System, Anti-Submarine Warfare (ASW) capability, Wide Band SATCOM, Higher Than Secret (HTS) processing, ASW SIGINT, and Enhanced track management (Minotaur).
- ECP 7 - Enhanced Multi-Static Active Coherent (MAC).

To expedite fielding capability to the P-8A Fleet, ECPs 4, 5, and 6 are executed concurrently as these capabilities are independent of one another. However, Enhanced MAC (ECP 7) is reliant on ECP 6's Combat System hardware and architecture to operate on the P-8A.

Note: Enhanced MAC (ECP 7) is developed within Program Element 0604261N and integrated into the platform within this PE.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605504N *I (U)Multi-Mission Maritime (MMA) Increment III*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	91.616	182.220	183.969	-	183.969
Current President's Budget	89.686	182.220	181.731	-	181.731
Total Adjustments	-1.930	0.000	-2.238	-	-2.238
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.930	0.000			
• Program Adjustments	0.000	0.000	-0.273	-	-0.273
• Rate/Misc Adjustments	0.000	0.000	-1.965	-	-1.965

Change Summary Explanation

Technical: Not applicable.

Schedule: Adjustments made to programmatic milestones and contract awards to better reflect the current updated Increment 3 Acquisition Strategy (signed Mar 9, 2016) defining the program as a series of ECPs.

Funding transferred from PE 0605500N to new PE 0605504N.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605504N / *(U)Multi-Mission Maritime (MMA) Increment III*	Project (Number/Name) 3218 / *P-8A Spiral 2 Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3218: *P-8A Spiral 2 Development*	0.000	89.686	182.220	181.731	-	181.731	193.405	149.398	152.527	130.668	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 334

A. Mission Description and Budget Item Justification

The P-8A Increment 3 program consists of incremental enhancement Engineering Change Proposals (ECPs) to system capabilities that will retain cost-wise effectiveness for major combat operations. Increment 3 will incorporate improvements to aircraft systems including Combat System hardware and architecture improvements, Anti-Submarine Warfare (ASW) and Anti-Surface Warfare (ASuW) sensor improvements, communication capability upgrades, ASuW Net Enabled Weapon (NEW), Higher-Than-Secret (HTS) security capability and High Altitude ASW Weapons Capability (HAAWC) datalink.

These capabilities will be developed as a series of ECPs for the P-8A and are as follows:
- ECP 4 - Software upgrades to Narrowband SATCOM and Targeting.
- ECP 5 - Net Enabled Weapon, High Frequency radio Internet Protocol (HF-IP), Integrated Broadcast Service (IBS) filtering, IBS receiver, and Harpoon II+.
- ECP 6 - Applications Based Architecture (ABA) and Combat System, Anti-Submarine Warfare (ASW) capability, Wide Band SATCOM, Higher Than Secret (HTS) processing, ASW SIGINT, and Enhanced track management (Minotaur).
- ECP 7 - Enhanced Multi-Static Active Coherent (MAC).

To expedite fielding capability to the P-8A Fleet, ECPs 4, 5, and 6 are executed concurrently as these capabilities are independent of one another. However, Enhanced MAC (ECP 7) is reliant on ECP 6's Combat System hardware and architecture to operate on the P-8A.

Note: Enhanced MAC (ECP 7) is developed within Program Element 0604261N and integrated into the platform within this PE.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Perform technology demonstrations and analyses of proposed new capabilities	82.834	157.245	154.670	0.000	154.670
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued execution of Spiral 2 (Increment 3) Applications Based Architecture (ABA) system development, Risk Reduction Interface and Capability Analysis contracting efforts. Developed and awarded competitive Wide Band SATCOM system hardware procurement contract. Continued Lead Capability Integrator (LCI), core Combat System architecture prototyping, capability application prototyping, and integration analysis efforts. Continued					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605504N / *(U)Multi-Mission Maritime (MMA) Increment III*	**Project (Number/Name)** 3218 / *P-8A Spiral 2 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Capability Development and Integration Engineering Change Proposal (ECP) maturity efforts to include Anti-Submarine Warfare (ASW) capability, Wide Band SATCOM, Net Enabled Weapon, and Sensor Upgrades. Continued P-8A TOC design and integration efforts. Prepared, created, and conducted program Milestone activities in preparation of formal "Ready For Proposal (RFP) Release" Milestone. ***FY 2017 Plans:*** Continue execution of Spiral 2 (Increment 3) Applications Based Architecture (ABA) system development, Risk Reduction Interface and Capability Analysis contracting efforts. Develop and award competitive Wide Band SATCOM system hardware procurement contract. Continue Lead Capability Integrator (LCI) and integration analysis efforts. Continue Capability Development and Integration Engineering Change Proposal (ECP) maturity efforts to include Anti-Submarine Warfare (ASW) capability, Wide Band SATCOM, Net Enabled Weapon, and Sensor Upgrades. Continue P-8A TOC design and integration efforts. Additionally, will initiate the Combat System Hardware effort which consists of an updated ABA computing architecture integrated with the existing P-8 mission system. ***FY 2018 Base Plans:*** Continue execution of Spiral 2 (Increment 3) Lead Capability Integrator (LCI) and integration efforts including further Applications Based Architecture (ABA) system development. Continue Capability Integration and Engineering Change Proposal (ECP) 4, 5, and 6 efforts to include Anti-Submarine Warfare (ASW) capability, Wide Band SATCOM, Net Enabled Weapon,and Sensor Upgrades. Continue P-8A Tactical Operations Center (TOC) design and integration efforts. Additionally, will continue the Combat System Hardware effort and associated Platform Integration efforts. Initial fielding of ECP4. Continue Increment 3 training system development. ***FY 2018 OCO Plans:*** N/A					
Title: Conduct technical, cost, risk and logistics analysis of proposed technologies	6.852	24.975	27.061	0.000	27.061
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Conducted technical, cost, risk and logistics analysis of proposed technologies. Evaluated system requirements through cost/performance trade-off analysis. Provided technical and management support for the development					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605504N / *(U)Multi-Mission Maritime (MMA) Increment III*	**Project (Number/Name)** 3218 / *P-8A Spiral 2 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
of acquisition documentation. Provided engineering and management of technical development effort. Increase in government led prototyping. ***FY 2017 Plans:*** Continue in-house government Lead Capability Integrator (LCI) activities and prototyping, Capability Development and Integration Engineering Change Proposal (ECP) efforts for Increment 3 capabilities. Conduct technical, cost, risk and logistics analysis of proposed technologies. Provide engineering and management of technical development efforts. Evaluate system performance and verify requirements through test and evaluation and update program documentation as necessary. ***FY 2018 Base Plans:*** Continue in-house government Lead Capability Integrator (LCI) activities, Capability Development and Integration Engineering Change Proposal (ECP) 4, 5, and 6 efforts for Increment 3 capabilities. Conduct technical, cost, risk and logistics analysis of proposed technologies. Provide engineering and management of technical development efforts. Evaluate system performance and verify requirements through test and evaluation and update program documentation as necessary. Initial fielding of ECP 4 ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	89.686	182.220	181.731	0.000	181.731

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0586: *P-8 Series*	28.092	18.836	18.665	-	18.665	186.990	215.321	212.427	210.566	2,135.144	3,068.322

Remarks

BLI0586 reflects the P-8A total program funding not just Increment 3.

D. Acquisition Strategy

As part of the P-8A evolutionary acquisition strategy, Spiral 2 (Increment 3) will incorporate the capabilities defined in the JROC approved P-8A Increment 2/3 Capability Development Document. These capabilities will be developed as a series of ECP's for the P-8A and Tactical Operations Center (ground support facility) similar to the approach used for Increment 2.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605504N / *(U)Multi-Mission Maritime (MMA) Increment III*	**Project (Number/Name)** 3218 / *P-8A Spiral 2 Development*

These ECPs are:
ECP 4 - Software upgrades to Narrowband SATCOM and Targeting.
ECP 5 - Net Enabled Weapon, High Frequency radio Internet Protocol (HF-IP), Integrated Broadcast Service (IBS) filtering, IBS receiver, and Harpoon II+.
ECP 6 - Applications Based Architecture (ABA) and Combat System, Anti-Submarine Warfare (ASW) capability, Wide Band SATCOM, Higher Than Secret (HTS) processing, ASW SIGINT, and Enhanced track management (Minotaur).
ECP 7 - Enhanced Multi-Static Active Coherent (MAC).

To expedite fielding capability to the P-8A Fleet, ECPs 4, 5, and 6 are executed concurrently as these capabilities are independent of one another. However, Enhanced MAC (ECP 7) is reliant on ECP 6's Combat System hardware and architecture to operate on the P-8A.

Note: Enhanced MAC (ECP 7) is developed within Program Element 0604261N and integrated into the platform within this PE.

E. Performance Metrics

Continue development of capability ECPs.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605504N / *(U)Multi-Mission Maritime (MMA) Increment III*	**Project (Number/Name)** 3218 / *P-8A Spiral 2 Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Dev - RR Interface	C/CPIF	Boeing : Seattle, WA	0.000	5.803	Oct 2015	0.000		0.000		-		0.000	0.000	5.803	5.803
Primary HW Dev - Capability Analysis	C/CPFF	Boeing : Seattle, WA	0.000	8.917	Nov 2015	0.000		0.000		-		0.000	0.000	8.917	8.917
Primary HW Dev - Capability Dev & Integration	C/CPFF	Boeing : Seattle, WA	0.000	15.142	Jun 2016	36.656	Oct 2016	35.101	Oct 2017	-		35.101	30.101	117.000	117.000
Primary HW Dev - Capability Dev & Integration	TBD	Boeing : St. Louis, MO	0.000	0.000		0.000		7.940	Nov 2017	-		7.940	65.413	73.353	-
Primary HW Dev - ABA SW Dev Vendor A	C/CPIF	Raytheon : Dallas, TX	0.000	6.156	Mar 2016	3.508	Oct 2016	0.000		-		0.000	0.000	9.664	9.664
Primary HW Dev - ABA SW Dev Vendor B	C/CPIF	Lockheed Martin : Manassas, VA	0.000	6.156	Mar 2016	3.930	Oct 2016	0.000		-		0.000	0.000	10.086	10.086
Primary HW Dev - Combat Systems Hardware Effort	Various	NSWC : Crane, IN	0.000	0.000		5.488	Jun 2017	27.906	Jun 2018	-		27.906	25.806	59.200	-
Primary HW Dev - Platform Integration	C/CPFF	Boeing : Seattle, WA	0.000	0.000		69.900	Jun 2017	45.212	Jan 2018	-		45.212	204.807	319.919	319.919
Primary HW Dev - Wideband SATCOM	C/CPFF	AMEWAS : California, MD	0.000	2.000	Jul 2016	8.000	Oct 2016	0.000		-		0.000	0.000	10.000	10.000
RCI2 - ECP3	C/CPFF	Boeing : Seattle, WA	0.000	14.317	Mar 2016	3.000	Oct 2016	0.000		-		0.000	0.000	17.317	17.317
LCI Development & Integration	Various	Various : Various	0.000	15.240	Jul 2016	14.252	Oct 2016	25.194	Oct 2017	-		25.194	81.393	136.079	-
Sys Eng (gov)	WR	NAWC AD : Pax River, MD	0.000	9.103	Nov 2015	12.511	Nov 2016	13.317	Nov 2017	-		13.317	42.235	77.166	-
		Subtotal	0.000	82.834		157.245		154.670		-		154.670	449.755	844.504	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605504N / *(U)Multi-Mission Maritime (MMA) Increment III*	Project (Number/Name) 3218 / *P-8A Spiral 2 Development*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Sup	WR	NAWC AD : Pax River, MD	0.000	0.625	Nov 2015	0.915	Nov 2016	0.689	Nov 2017	-		0.689	3.672	5.901	-
Studies & Analysis	C/CPFF	JHU : Pax River, MD	0.000	3.045	Jul 2016	0.841	Nov 2016	3.105	Nov 2017	-		3.105	0.000	6.991	6.991
		Subtotal	0.000	3.670		1.756		3.794		-		3.794	3.672	12.892	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Dev Test & Eval	WR	NAWC AD : Pax River, MD	0.000	1.421	Oct 2015	12.111	Nov 2016	11.847	Nov 2017	-		11.847	Continuing	Continuing	Continuing
GFE/GFI/GFP	WR	NAWC AD : Pax River, MD	0.000	0.077	Nov 2015	4.266	Nov 2016	4.590	Nov 2017	-		4.590	15.147	24.080	-
Oper Test & Eval	WR	NAWC AD : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	93.452	93.452	-
Test Assets	WR	NAWC AD : Pax River, MD	0.000	0.000		0.000		0.000		-		0.000	47.488	47.488	-
		Subtotal	0.000	1.498		16.377		16.437		-		16.437	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Eng Tech Serv (NON-FFRDC)	C/CPFF	Various : Various	0.000	0.118	Dec 2015	1.090	Nov 2016	1.109	Nov 2017	-		1.109	1.129	3.446	3.446
Mgmt Suppt Serv (NON-FFRDC)	C/CPFF	RBC : Alexandria, VA	0.000	0.573	Dec 2015	3.693	Nov 2016	3.703	Nov 2017	-		3.703	8.356	16.325	16.325
Program Mgmt Support	WR	NAWC AD : Pax River, MD	0.000	0.918	Dec 2015	1.959	Nov 2016	1.918	Nov 2017	-		1.918	2.969	7.764	-
Travel	Allot	NAWC AD : Pax River, MD	0.000	0.075	Oct 2015	0.100	Nov 2016	0.100	Nov 2017	-		0.100	0.400	0.675	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605504N / *(U)Multi-Mission Maritime (MMA) Increment III*	Project (Number/Name) 3218 / *P-8A Spiral 2 Development*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	0.000	1.684		6.842		6.830		-		6.830	12.854	28.210	-

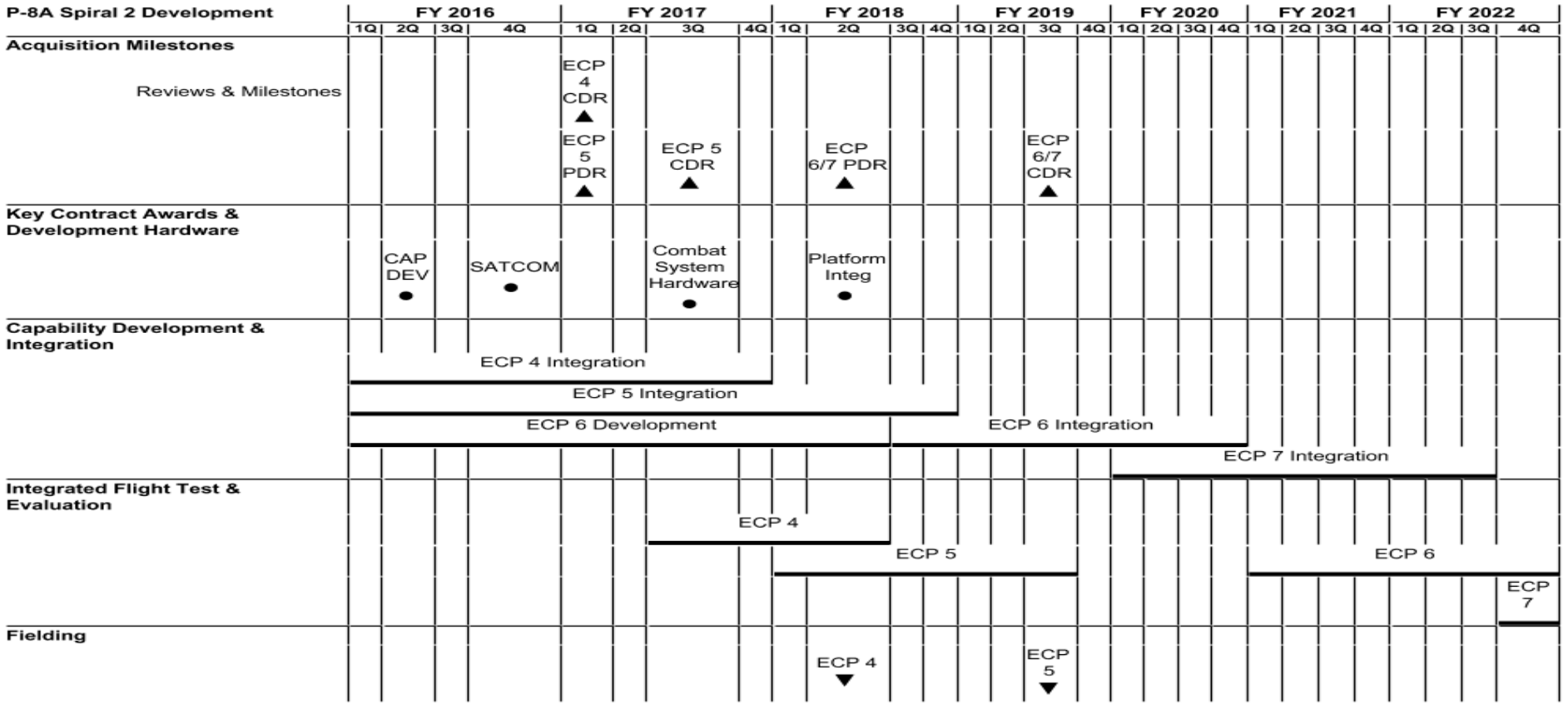
Remarks

Continued engineering and management support reflected in FY16 profile are necessary to continue LCI efforts.

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	89.686		182.220		181.731		-		181.731	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605504N / *(U)Multi-Mission Maritime (MMA) Increment III*	**Project (Number/Name)** 3218 / *P-8A Spiral 2 Development*



2018PB - 0605504N - 3218

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605504N / *(U)Multi-Mission Maritime (MMA) Increment III*	**Project (Number/Name)** 3218 / *P-8A Spiral 2 Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
P-8A Spiral 2 Development				
Acquisition Milestones: Reviews & Milestones: ECP 4 Critical Design Review (CDR)	1	2017	1	2017
Acquisition Milestones: Reviews & Milestones: ECP 5 Preliminary Desgin Review (PDR)	1	2017	1	2017
Acquisition Milestones: Reviews & Milestones: ECP 5 Critical Design Review (CDR)	3	2017	3	2017
Acquisition Milestones: Reviews & Milestones: ECP 6/7 Preliminary Design Review (PDR)	2	2018	2	2018
Acquisition Milestones: Reviews & Milestones: ECP 6/7 Critical Design Review (CDR)	3	2019	3	2019
Key Contract Awards & Development Hardware: Capabilities Development (CAP DEV)	2	2016	2	2016
Key Contract Awards & Development Hardware: SATCOM	4	2016	4	2016
Key Contract Awards & Development Hardware: Combat System Hardware	3	2017	3	2017
Key Contract Awards & Development Hardware: Platform Integration	2	2018	2	2018
Capability Development & Integration: ECP 4 Integration	1	2016	4	2017
Capability Development & Integration: ECP 5 Integration	1	2016	4	2018
Capability Development & Integration: ECP 6 Development	1	2016	2	2018
Capability Development & Integration: ECP 6 Integration	3	2018	4	2020
Capability Development & Integration: ECP 7 Integration	1	2020	3	2022
Integrated Flight Test & Evaluation: ECP 4	3	2017	2	2018
Integrated Flight Test & Evaluation: ECP 5	1	2018	3	2019
Integrated Flight Test & Evaluation: ECP 6	1	2021	4	2022
Integrated Flight Test & Evaluation: ECP 7	4	2022	4	2022
Fielding: ECP 4	2	2018	2	2018
Fielding: ECP 5	3	2019	3	2019

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605611M *I (U) MC AVS Development & Demonstration*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	0.000	0.000	178.993	-	178.993	79.782	33.530	33.305	61.287	Continuing	Continuing
0025: *Amphibious Combat Vehicle 1.1*	0.000	0.000	0.000	178.993	-	178.993	50.382	33.530	1.705	0.588	Continuing	Continuing
0026: *Amphibious Combat Vehicle 1.2*	0.000	0.000	0.000	0.000	-	0.000	29.400	0.000	31.600	60.699	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** P472												

Note

Beginning in FY18, the program funding transitions from Program Element 0603611M Marine Corps Assault Vehicles to Program Element 0605611M MC AVS Development and Demonstration as the program proceeds through the acquisition process.

A. Mission Description and Budget Item Justification

The Amphibious Combat Vehicle is an armored personnel carrier, balanced in performance, protection, and payload for employment within the Ground Combat Element (GCE) and throughout the range of military operations, to include a swim capability.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	178.993	-	178.993
Total Adjustments	0.000	0.000	178.993	-	178.993
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	178.992	-	178.992
• Rate/Misc Adjustments	0.000	0.000	0.001	-	0.001

Change Summary Explanation

The increase from FY17 to FY18 of $20.3M is primarily attributed to procurement of 4 Full Up System Level (FUSL) test vehicles and instrumentation for Live Fire Test and Evaluation and contractor support of IOT&E and LFT&E.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605611M / *(U) MC AVS Development & Demonstration*	Project (Number/Name) 0025 / *Amphibious Combat Vehicle 1.1*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0025: *Amphibious Combat Vehicle 1.1*	0.000	0.000	0.000	178.993	-	178.993	50.382	33.530	1.705	0.588	Continuing	Continuing
Quantity of RDT&E Articles		-	-	4	-	4	-	-	-	-		

Project MDAP/MAIS Code: P472

Note

Beginning in FY18, the program funding transitions from Program Element 0603611M Marine Corps Assault Vehicles to Program Element 0605611M MC AVS Development and Demonstration as the program proceeds through the acquisition process.

The increase from FY17 to FY18 of $20.3M is primarily attributed to procurement of 4 Full Up System Level (FUSL) test vehicles and instrumentation for Live Fire Test and Evaluation and contractor support of IOT&E and LFT&E.

A. Mission Description and Budget Item Justification

The Amphibious Combat Vehicle (ACV) will be a partial and complementary replacement for the legacy Assault Amphibious Vehicle (AAV) battalions within the Marine Divisions. ACV-equipped AA companies will provide protected mobility and general support lift to elements of Marine Infantry Battalions. The ACV, an advanced generation, eight-wheeled armored personnel carrier, will mitigate current and projected capability gaps by providing improved lethality against dismounted enemy troops, more effective land and water tactical mobility, and increased force protection and survivability from blast, fragmentation, and kinetic energy threats. The ACV program is structured to be executed in multiple phases, with the first phase designed to provide an initial operational capability of personnel carriers. Subsequent phases are planned to expand the personnel carrier capacity and to develop additional command and control and tactical recovery capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development	0.000	0.000	138.833	0.000	138.833
Articles:	-	-	4	-	4
Description: System Design and Development; EMD test vehicle manufacturing; prime contractor Developmental and Operational test, and development of Logistics Management Information (LMI) data.					
The increase in Product & Development between FY17 to FY18 ($29.297M) is attributed to the procurement of 4 Full-up System Level (FUSL) vehicles, Contractor support of Initial Operational Test & Evaluation (IOT&E) and Live Fire Test & Evaluation (LFT&E), and FUSL-vehicle Government Furnished Equipment (GFE) procurement.					
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605611M / *(U) MC AVS Development & Demonstration*	**Project (Number/Name)** 0025 / *Amphibious Combat Vehicle 1.1*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Details provided in PE 0603611M/Project 0025 ***FY 2017 Plans:*** - Details provided in PE 0603611M/Project 0025 ***FY 2018 Base Plans:*** - Continue contractor Developmental Test activities. - Complete corrective action modifications which resulted from Reliability Growth Testing (RGT). - Initiate procurement of 4 Full-Up System Level (FUSL) Live Fire vehicles. - Initiate procurement of GFE communication suites and Remote Weapon Station (RWS) for FUSL end items. - Initiate advance capabilities improvements, Developmental Test (DT), Initial Operational Test & Evaluation (IOT&E) and Live Fire Test & Evaluation (LFT&E) support for the down-selected contractor. ***FY 2018 OCO Plans:*** N/A					
Title: Management Services ***Articles:*** ***Description:*** Contract Advisory and Assistance Services (Engineering and Technical Support, Management Support Services, and Studies and Analyses). The increase in Management Support Services between FY17 & FY18 ($0.209K) is attributed to the additional logistics and test and evaluation support ($1.254M) and the reduction of Engineering and Technical Services ($1.045M) due to the completion of the NATC Tire Study and decrease in Modeling & Simulation (M&S) Force Protection effort. ***FY 2016 Accomplishments:*** - Details provided in PE 0603611M/Project 0025 ***FY 2017 Plans:*** - Details provided in PE 0603611M/Project 0025 ***FY 2018 Base Plans:*** - Continue business, acquisition, logistics, and engineering related activities for program document development, program analysis, acquisition logistics management, and financial management support. - Continue engineering and technical services for RWS, logistical, maintenance support, and integration.	0.000 -	0.000 -	7.242 -	0.000 -	7.242 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605611M / *(U) MC AVS Development & Demonstration*	**Project (Number/Name)** 0025 / *Amphibious Combat Vehicle 1.1*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Continue force protection modeling and simulation activities. - Continue Depot Source of Repair (DSOR) Analyses on secondary repairable items, and product support Business Case Analysis on support concepts. - Continue analyses of product support elements to support Maintenance Plan development, Support and Test Equipment, Calibration, and other logistics elements. ***FY 2018 OCO Plans:*** N/A					
Title: Program Support ***Articles:*** ***Description:*** Government labor, material, and travel for Integrated Logistics Support, Technical Publications, Support Equipment development, In-house Technical Support, and Program Management Support. ***FY 2016 Accomplishments:*** - Details provided in PE 0603611M/Project 0025 ***FY 2017 Plans:*** - Details provided in PE 0603611M/Project 0025 ***FY 2018 Base Plans:*** - Continue Engineering Support for communication suite integration efforts documented during technical information and review meetings. - Continue procurement, inventory, checkout, kitting, shipment, and troubleshooting of ACV 1.1 communications suite Government Furnished Property (GFP) for FUSL test vehicles. - Continue Reliability, Availability, and Maintainability (RAM-D), and human systems integration activities for ACV 1.1. - Continue Digital Integrated Facility (DIF) architecture support. - Complete RWS marinization and integration support. - Continue technical support for training packages. - Initiate development of Training Devices/Simulators for ACV 1.1. ***FY 2018 OCO Plans:*** N/A	0.000 -	0.000 -	7.620 -	0.000 -	7.620 -
Title: Test & Evaluation	0.000	0.000	25.298	0.000	25.298

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605611M / *(U) MC AVS Development & Demonstration*	**Project (Number/Name)** 0025 / *Amphibious Combat Vehicle 1.1*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
Description: Government Developmental, Operational, and Live Fire test and evaluation activities. ***FY 2016 Accomplishments:*** - Details provided in PE 0603611M/Project 0025 ***FY 2017 Plans:*** - Details provided in PE 0603611M/Project 0025 ***FY 2018 Base Plans:*** - Continue LFT&E activities. - Continue Developmental Testing. - Initiate Operational Assessment (OA). ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	178.993	0.000	178.993

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PMC/2025: *Amphibious Combat Vehicle 1.1*	0.000	0.000	161.511	-	161.511	169.811	316.064	471.775	0.761	0.000	1,119.922
• PMC/7000/0605611M: *Initial Spares - ACV 1.1*	0.000	0.000	5.569	-	5.569	6.221	14.115	13.798	0.000	0.000	39.703
• PMC/2026: *Amphibious Combat Vehicle 1.2*	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	603.826	0.000	603.826
• RDTEN/0603611M/0025: *Marine Corps Assault Vehicles*	196.991	158.682	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	584.911
• PMC/7000/0605611M: *Initial Spares - ACV 1.2*	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	19.539	0.000	19.539
• RDTE/0605611M/0026: *Amphibious Combat Vehicle 1.2*	0.000	0.000	0.000	-	0.000	29.400	0.000	31.600	60.699	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605611M / *(U) MC AVS Development & Demonstration*	**Project (Number/Name)** 0025 / *Amphibious Combat Vehicle 1.1*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

The program office awarded two competitive Engineering, Manufacturing and Development (EMD) contracts to two vendors to build 16 vehicles each (32 total). ACV Increment 1.1 entered the acquisition cycle at Milestone B in FY16 and will down-select to one vendor at Milestone C. In FY18, the program will enter into Low Rate Initial Production (LRIP) and Full Rate Production (FRP) will begin in FY20.

E. Performance Metrics

Milestone Reviews
Milestone B: 1QFY16
Milestone C: 3QFY18

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605611M / *(U) MC AVS Development & Demonstration*	**Project (Number/Name)** 0025 / *Amphibious Combat Vehicle 1.1*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Design &Development	C/FPIF	Various : Various	0.000	0.000		0.000		136.288	Jan 2018	-		136.288	47.394	183.682	-
Other Product Devolpment	C/FFP	SPAWAR : New Jersey/Charleston/ Picatinny	0.000	0.000		0.000		2.546	Jan 2018	-		2.546	0.000	2.546	-
		Subtotal	0.000	0.000		0.000		138.834		-		138.834	47.394	186.228	-

Remarks

- The increase in System Design & Development between FY17 & FY18 ($29.489M) is attributed to procurement of 4 FUSL Vehicles and Contractor support of IOT&E and LFT&E.
- Other Product Development provides GFE (Communication Suites and Remote Weapons Stations (RWS)) for FUSL test purposes.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support	WR	NSWC-Dahlgren : Dahlgren, VA	0.000	0.000		0.000		0.425	Apr 2018	-		0.425	0.825	1.250	-
Technical Data & Pubs Development	WR	SPAWAR : Charleston, SC	0.000	0.000		0.000		0.100	Sep 2018	-		0.100	0.000	0.100	-
GFP Management	WR	SPAWAR : Charleston, SC	0.000	0.000		0.000		4.687	Apr 2018	-		4.687	2.215	6.902	-
Training Devices/ Simulators	TBD	TBD : TBD	0.000	0.000		0.000		2.286	Apr 2018	-		2.286	2.041	4.327	-
Travel	Various	Various : Various	0.000	0.000		0.000		0.122	Sep 2018	-		0.122	0.280	0.402	-
		Subtotal	0.000	0.000		0.000		7.620		-		7.620	5.361	12.981	-

Remarks

- FY18 initiates development of ACV 1.1 Training Devices/Simulators needed to support the system.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605611M / *(U) MC AVS Development & Demonstration*	Project (Number/Name) 0025 / *Amphibious Combat Vehicle 1.1*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	WR	Various : Various	0.000	0.000		0.000		15.081	Jan 2018	-		15.081	10.317	25.398	-
Operational Test & Evaluation	WR	MCOTEA : Quantico,VA	0.000	0.000		0.000		2.348	Jan 2018	-		2.348	12.316	14.664	-
Live Fire Test & Evaluation	WR	Various : Various	0.000	0.000		0.000		7.868	Jan 2018	-		7.868	8.509	16.377	-
		Subtotal	0.000	0.000		0.000		25.297		-		25.297	31.142	56.439	-

Remarks

- The increase in Live Fire Test & Evaluation between FY17 to FY18 ($1.282M) is attributed to FUSL instrumentation procurements.
* The FY 2017 award date for cost categories with various activities is the actual obligation date for the last award in the category.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Technical Services	C/FFP	Various : Various	0.000	0.000		0.000		0.900	Jul 2018	-		0.900	1.256	2.156	-
Management Support Services	C/FFP	DDG : Stafford, VA	0.000	0.000		0.000		6.042	Mar 2018	-		6.042	0.450	6.492	-
Studies and Analysis	C/FFP	Various : Various	0.000	0.000		0.000		0.300	Jul 2018	-		0.300	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		7.242		-		7.242	-	-	-

Remarks

- The increase in Management Support Services between FY17 and FY18 ($1.254M) is attributed to the addition of logistics and test and evaluation support ongoing efforts such as OA, SVR, and PRR.

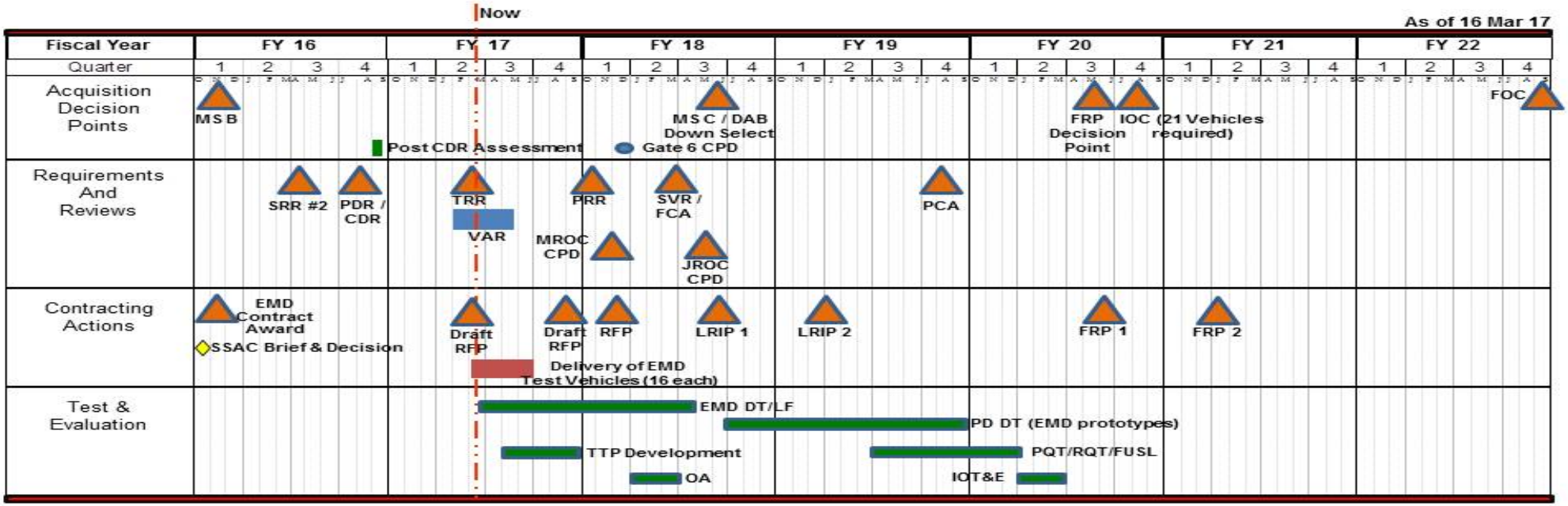
	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		178.993		-		178.993	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605611M / *(U) MC AVS Development & Demonstration*	**Project (Number/Name)** 0025 / *Amphibious Combat Vehicle 1.1*

Unclassified (U)

ACV 1.1 Program Schedule



Unclassified (U)

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605611M / *(U) MC AVS Development & Demonstration*	**Project (Number/Name)** 0025 / *Amphibious Combat Vehicle 1.1*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0025				
MS B	1	2016	1	2016
EMD Contract Award	1	2016	1	2016
Systems Readiness Review 2	3	2016	3	2016
Preliminary Design Review/Critical Design Review	4	2016	4	2016
EMD Vehicle Delivery (32 Vehicles)	2	2017	3	2017
Vehicle Acceptance Review	2	2017	3	2017
Development Test/Live Fire Test	2	2017	1	2020
TPP Development	3	2017	4	2017
Operational Assessment (OA)	2	2018	3	2018
Production Readiness Review (PRR)	1	2018	1	2018
System Verification Review (SVR)	2	2018	2	2018
Capabilities Production Document (CPD)	3	2018	3	2018
MS C/DAB Down Select	3	2018	3	2018
LRIP Option 1 Exercised	3	2018	3	2018
PCA	4	2019	4	2019
LRIP Option 2 Exercised	2	2019	2	2019
Initial Operational Test & Evaluation (IOT&E)/Full Up System Level (FUSL)	2	2020	2	2020
FRP Decision	3	2020	3	2020
FRP #1 Option Exercised	3	2020	3	2020
IOC	4	2020	4	2020
FRP #2 Option Exercised	2	2021	2	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605611M / *(U) MC AVS Development & Demonstration*	**Project (Number/Name)** 0025 / *Amphibious Combat Vehicle 1.1*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
FOC	4	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605611M / *(U) MC AVS Development & Demonstration*	Project (Number/Name) 0026 / *Amphibious Combat Vehicle 1.2*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0026: *Amphibious Combat Vehicle 1.2*	0.000	0.000	0.000	0.000	-	0.000	29.400	0.000	31.600	60.699	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Amphibious Combat Vehicle (ACV) will be a partial and complementary replacement for the legacy Amphibious Assault Vehicle (AAV) battalion's within the Marine Divisions. ACV-equipped AA companies will provide protected mobility and general support lift to elements of Marine Infantry Battalions. The ACV, an advanced generation, eight-wheeled armored personnel carrier, will mitigate current and projected capability gaps by providing improved lethality against dismounted enemy troops, more effective land and water tactical mobility, and increased force protection and survivability from blast, fragmentation, and kinetic energy threats. The ACV program is structured to be executed in multiple phases, with the first phase designed to provide an initial operational capability of personnel carries. Subsequent phases are planned to expand the personnel carrier capacity and to develop additional command and control and tactical recovery capabilities. ACV 1.2 will provide the Marine Corps with armored protected land mobility to effectively maneuver with the rest of the armored MAGTF, the direct fire lethality to support infantry maneuver, and the water mobility to self-deploy from amphibious shipping. In addition to fielding more ACV personnel variants, ACV 1.2 will develop and field Command & Control and Recovery variants.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605813M *I (U)Joint Light Tactical Veh (JTLV) Sys Dev & Dem*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	0.000	0.000	20.710	-	20.710	2.280	2.135	0.000	0.000	0.000	25.125
3209: *Joint Light Tactical Vehicle*	0.000	0.000	0.000	20.710	-	20.710	2.280	2.135	0.000	0.000	0.000	25.125
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 279												

Note

The FY 2011 NDAA directed the Services to separate the Joint Light Tactical Vehicle (JLTV) program into distinct PEs to provide Congress with increased transparency and allow for more effective oversight. Transition of funding from PE 0603635M to PE 0605812M was effective beginning in FY 2013.

Beginning in FY18, the program funding transitions from Program Element 0605812M Joint Light Tactical Vehicle (JLTV) EMD to Program Element 0605813M Joint Light Tactical Vehicle (JLTV) System Development and Demonstration as the program proceeds through the acquisition process.

A. Mission Description and Budget Item Justification

Funding supports the development and testing of the JLTV Family of Vehicles (FoV). JLTV is a joint program between the U.S. Army and the U.S. Marine Corps, of which the U.S. Army is the lead service. JLTV is a FoV capable of performing multiple mission roles designed to provide protected, sustained, and networked mobility for personnel and payloads across the full Range of Military Operations (ROMO). JLTV objectives include increased performance, protection, and payload over the current legacy HMMWV fleet, minimizing ownership costs by maximizing commonality, fuel efficiency and reliability. The commonality of components, maintenance procedures, training, etc, among vehicles is expected to be inherent in FoV solutions across mission variants to minimize total ownership cost. Unique service requirements have been minimized.

Major FY18 budget activities include the continued monitoring of contractor performance, completion of logistics demonstration, completion of provisioning and logistics publications for test, delivery of Live Fire (LF) Test Assets, and the completion of the Low-Rate Initial Production (LRIP) test program required events such as: Full Up System Level (FUSL) test, Multi-Service Operational Test and Evaluation (MOT&E), Automatic Fire Extinguishing System (AFES) test, and C4I test.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605813M *I (U)Joint Light Tactical Veh (JTLV) Sys Dev & Dem*

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	20.710	-	20.710
Total Adjustments	0.000	0.000	20.710	-	20.710
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	20.710	-	20.710

Change Summary Explanation

The funding decrease from FY2017 to FY2018 of $2.487M is a result of a reduction in test scope and program management support requirements.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605813M / *(U)Joint Light Tactical Veh (JTLV) Sys Dev & Dem*	Project (Number/Name) 3209 / *Joint Light Tactical Vehicle*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3209: *Joint Light Tactical Vehicle*	0.000	0.000	0.000	20.710	-	20.710	2.280	2.135	0.000	0.000	0.000	25.125
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 279

Note

Beginning in FY18, the program funding transitions from Program Element 0605812M Joint Light Tactical Vehicle (JLTV) EMD to Program Element 0605813M Joint Light Tactical Vehicle (JLTV) System Development and Demonstration as the program advances through the acquisition process.

NOTE: The funding decrease from FY2017 to FY2018 of $2.487M is a result of a reduction in test scope and program management support requirements.

A. Mission Description and Budget Item Justification

Funding supports the development and testing of the JLTV Family of Vehicles (FoV). JLTV is a joint program between the U.S. Army and the U.S. Marine Corps, of which the U.S. Army is the lead service. JLTV is a FoV capable of performing multiple mission roles designed to provide protected, sustained, and networked mobility for personnel and payloads across the full Range of Military Operations (ROMO). JLTV objectives include increased performance, protection, and payload over the current legacy HMMWV fleet, minimizing ownership costs by maximizing commonality, fuel efficiency and reliability. The commonality of components, maintenance procedures, training, etc, among vehicles is expected to be inherent in FoV solutions across mission variants to minimize total ownership cost. Unique service requirements have been minimized.

Major FY18 budget activities include the continued monitoring of contractor performance, completion of logistics demonstration, completion of provisioning and logistics publications for test, delivery of Live Fire (LF) Test Assets, and the completion of the Low-Rate Initial Production (LRIP) test program required events such as: Full Up System Level (FUSL) test, Multi-Service Operational Test and Evaluation (MOT&E), Automatic Fire Extinguishing System (AFES) test, and C4I test.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Live Fire Test Support	0.000	0.000	5.296	0.000	5.296
Articles:	-	-	-	-	-
Description: NOTE: FY17 funding is $5.041M. The increase of $.255M in FY18 is for Prime vendor support of test events in FY18. JLTV LRIP contract providing test assets, material, contractor labor for the execution of Live Fire Test activity, and implementation of Engineering Change Proposals.					
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605813M / *(U)Joint Light Tactical Veh (JTLV) Sys Dev & Dem*	**Project (Number/Name)** 3209 / *Joint Light Tactical Vehicle*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Details provided in PE 0605812M/Project 3209 ***FY 2017 Plans:*** - Details provided in PE 0605812M/Project 3209 ***FY 2018 Base Plans:*** -Complete vendor support of planned test events to include FUSL, MOT&E, Logistics Demonstration, AFES, C4I, corrosion, and ballistic cab/coupon tests. -Continue vendor RDT&E activity on the LRIP contract. -Continue logistics support of GFE required for LF Test events. ***FY 2018 OCO Plans:*** N/A					
Title: GFE, ILS, Facilities Documentation/Analysis and Support Engineering ***Articles:*** ***FY 2016 Accomplishments:*** - Details provided in PE 0605812M/Project 3209 ***FY 2017 Plans:*** - Details provided in PE 0605812M/Project 3209 ***FY 2018 Base Plans:*** -Continue systems integration activity in support of LF test and systems development at the Government Systems Integration Labratory. ***FY 2018 OCO Plans:*** N/A	0.000 -	0.000 -	1.500 -	0.000 -	1.500 -
Title: Test and Evaluation Events and Analysis ***Articles:*** ***Description:*** NOTE: FY17 funding is $14.658M. The decrease between FY2017 and FY2018 of $1.439M is a result of reduced test scope and the conclusion of planned test events in accordance with the approved program Test and Evaluation Master Plan (TEMP). ***FY 2016 Accomplishments:***	0.000 -	0.000 -	13.219 -	0.000 -	13.219 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605813M / *(U)Joint Light Tactical Veh (JTLV) Sys Dev & Dem*	**Project (Number/Name)** 3209 / *Joint Light Tactical Vehicle*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Details provided in PE 0605812M/Project 3209 ***FY 2017 Plans:*** - Details provided in PE 0605812M/Project 3209 ***FY 2018 Base Plans:*** -Continue activity in accordance with the program TEMP to include FUSL, MOT&E, AFES, and C4I test. -Complete PCA, Manufacturing Readiness Assessment (MRA), and other RDT&E funded reviews. ***FY 2018 OCO Plans:*** N/A					
Title: Program Management Support ***Articles:*** ***Description:*** NOTE: FY17 funding is $1.998M. The decrease of $1.303M in FY18 is due to support costs transition from RDT&E to PMC as the program matures through the acquisition process. ***FY 2016 Accomplishments:*** - Details provided in PE 0605812M/Project 3209 ***FY 2017 Plans:*** - Details provided in PE 0605812M/Project 3209 ***FY 2018 Base Plans:*** -Continue support for LRIP activity such as program management for test events, GFE management, monitoring and execution of the LRIP contract, and monitoring of vendor performance during LF testing. ***FY 2018 OCO Plans:*** N/A	0.000 -	0.000 -	0.695 -	0.000 -	0.695 -
Accomplishments/Planned Programs Subtotals	0.000	0.000	20.710	0.000	20.710

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PMC/5095: *Joint Light Tactical Vehicle (JLTV)*	58.578	113.230	233.639	-	233.639	665.477	739.211	469.511	532.720	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605813M / *(U)Joint Light Tactical Veh (JTLV) Sys Dev & Dem*	**Project (Number/Name)** 3209 / *Joint Light Tactical Vehicle*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E/0605812M: *Joint Light Tactical Vehicle (JLTV) EMD*	24.790	23.197	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	142.887
• OPA/D15603: *JLTV (Army)*	249.911	587.514	804.440	-	804.440	1,078.794	1,099.507	1,135.483	1,168.494	Continuing	Continuing
• RDT&E/VU9: *0605812A - JLTV (Army)*	31.197	11.530	23.470	-	23.470	3.056	2.121	2.150	2.150	Continuing	Continuing

Remarks

D. Acquisition Strategy

Joint Light Tactical Vehicle (JLTV) is a Joint Service Program with the U.S. Army and U.S. Marine Corps as the two main components. The U.S. Army is the JLTV service lead.

The JLTV Program entered the Production and Deployment Phase with the Acquisition Decision Memorandum authorization on 25 August 2015. With Milestone C approval, the LRIP fixed price contract was awarded to Oshkosh Defense LLC on 25 August 2015. This contract consists of a three year LRIP period with options for five additional years of FRP deliveries. JPO JLTV requested separately priced firm fixed price (FFP) option(s) for purchase of the Technical Data Package (TDP) with appropriate data rights to allow for possible future competition for production vehicles and spares.

During the LRIP phase, JPO JLTV will continue to produce production vehicles for extensive Test and Evaluation activities to support a FRP decision. A ramp up of JLTV quantities will continue thru FY20 to support fielding to U.S. Army and USMC units once the FRP decision is achieved and allow the program to transition into Full Rate production.

The JLTV program will continually monitor emerging technologies and capabilities through its partnerships with U.S. Army and USMC science and technology organizations as well as through industry market research and partnerships. At this time follow-on increments for technology insertion are undefined; the JLTV program will look for opportunities to implement increased capabilities throughout the system Life Cycle.

E. Performance Metrics

Milestone Reviews

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605813M / *(U)Joint Light Tactical Veh (JTLV) Sys Dev & Dem*	**Project (Number/Name)** 3209 / *Joint Light Tactical Vehicle*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Live Fire Test Support	C/FFP	Oshkosh Defense : Oshkosh, WI	0.000	0.000		0.000		5.296	Dec 2017	-		5.296	0.760	6.056	-
		Subtotal	0.000	0.000		0.000		5.296		-		5.296	0.760	6.056	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Integration-GSIL	MIPR	SPAWAR Atlantic : Charleston, SC	0.000	0.000		0.000		1.500	Feb 2018	-		1.500	3.658	5.158	-
		Subtotal	0.000	0.000		0.000		1.500		-		1.500	3.658	5.158	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test and Evaluation (Performance, RAM, Ballistic, Report Generation	MIPR	Government Proving Grounds-ATC : Aberdeen, MD	0.000	0.000		0.000		0.698	Jan 2018	-		0.698	0.000	0.698	-
Operational Test and Evaluation (Performance, RAM, Ballistic, Report Generation	MIPR	Government Proving Grounds-Various : Various	0.000	0.000		0.000		10.074	Jan 2018	-		10.074	0.000	10.074	-
Developmental Test and Evaluation Oversight	MIPR	MCOTEA : Quantico, VA	0.000	0.000		0.000		0.200	Jan 2018	-		0.200	0.000	0.200	-
Live Fire Test and Evaluation	MIPR	ATC : Aberdeen, MD	0.000	0.000		0.000		1.767	Jan 2018	-		1.767	0.000	1.767	-
Developmental Test and Evaluation	C/FFP	CORVID : Moorsville, NC	0.000	0.000		0.000		0.480	May 2018	-		0.480	0.000	0.480	-
		Subtotal	0.000	0.000		0.000		13.219		-		13.219	0.000	13.219	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605813M / *(U)Joint Light Tactical Veh (JTLV) Sys Dev & Dem*	Project (Number/Name) 3209 / *Joint Light Tactical Vehicle*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

FY17 Operational Test and Evaluation funding is $4.896M (PE 0605812M). The funding increase of $5.178M from FY17 to FY18 is due to the ramp up in Operational Test activity in accordance with the approved program TEMP.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/FFP	Kalman, Inc : Stafford, VA	0.000	0.000		0.000		0.245	Dec 2017	-		0.245	0.000	0.245	-
Program Management Support	C/CPFF	CECOM/MITRE : Aberdeen, MD	0.000	0.000		0.000		0.150	Oct 2017	-		0.150	0.000	0.150	-
Travel	Various	MCSC : Quantico, VA	0.000	0.000		0.000		0.300	Oct 2017	-		0.300	0.000	0.300	-
		Subtotal	0.000	0.000		0.000		0.695		-		0.695	0.000	0.695	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		20.710		-		20.710	4.418	25.128	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605813M / *(U)Joint Light Tactical Veh (JTLV) Sys Dev & Dem*	**Project (Number/Name)** 3209 / *Joint Light Tactical Vehicle*

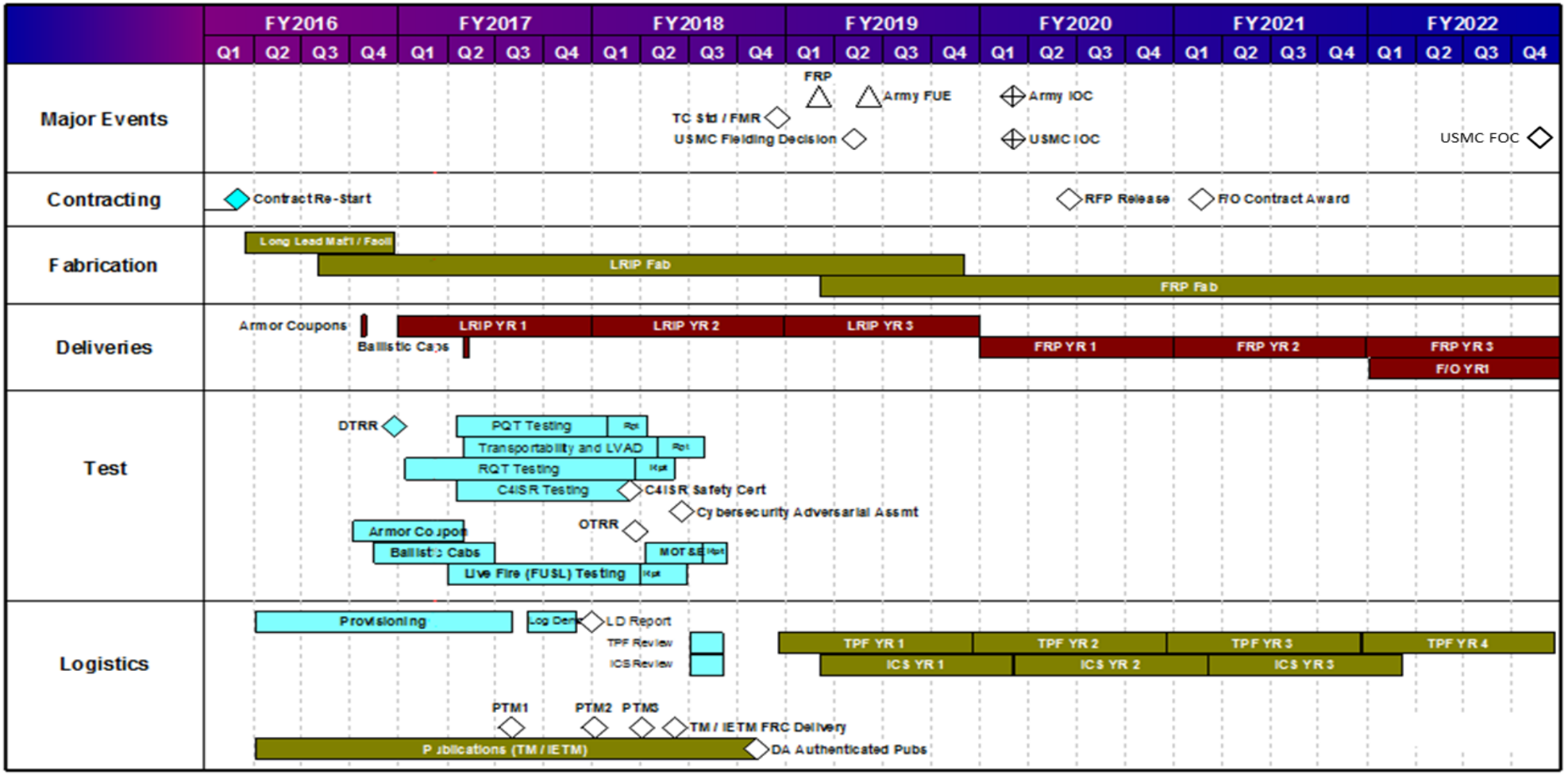


Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0605813M / *(U)Joint Light Tactical Veh (JTLV) Sys Dev & Dem*	**Project (Number/Name)** 3209 / *Joint Light Tactical Vehicle*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3209				
Requirements/Production Qualification Test	1	2017	2	2018
Full Up Systems Level Test	1	2017	2	2018
Logistics Demonstration	3	2017	4	2017
Multi-Service Operational Test and Evaluation	2	2018	3	2018
Full Rate Production Decision	1	2019	1	2019
USMC Fielding Decision	2	2019	2	2019
USMC Initial Operational Capability	1	2020	1	2020
USMC Full Operational Capability	4	2022	4	2022
Full Operational Capability	4	2022	4	2022

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0204202N / *DDG-1000*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	1,282.551	101.724	45.642	140.500	-	140.500	120.412	15.966	0.000	0.000	0.000	1,706.795
2464: *DD(X) Sys Design, Dev & Integration*	1,282.551	101.724	45.642	140.500	-	140.500	120.412	15.966	0.000	0.000	0.000	1,706.795

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 197

A. Mission Description and Budget Item Justification

This Program Element (PE) provides funds for development of the DDG 1000 Class of U.S. Navy surface combatants. The mission of the DDG 1000 class is to provide credible independent forward presence/deterrence and operate as an integral part of Naval, Joint or Combined Maritime Forces. DDG 1000 will provide advanced land attack capability in support of the ground campaign and contribute to Naval, Joint or Combined battlespace dominance in littoral operations. DDG 1000 will establish and maintain surface and sub-surface superiority, provide local air defense, and incorporate signature reduction to operate in all threat environments. DDG 1000 will have seamless Joint Interoperability to integrate all source information for battlespace awareness and weapons direction.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	103.179	45.642	19.279	-	19.279
Current President's Budget	101.724	45.642	140.500	-	140.500
Total Adjustments	-1.455	0.000	121.221	-	121.221
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.455	0.000			
• Program Adjustments	0.000	0.000	119.821	-	119.821
• Rate/Misc Adjustments	0.000	0.000	1.400	-	1.400

Change Summary Explanation

FY18: An increase of $119.8M for the DDG1000 Test and Evaluation effort in accordance with Test and Evaluation Master Plan (TEMP) 1560, Port Release 8 Software (SW) Integration, Software Corrections, Tactical Tomahawk Weapon Control System Integration (LASIL), and Component Shock Qualification. $1.4M increase is for rate and inflation adjustments.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0204202N / *DDG-1000*	Project (Number/Name) 2464 / *DD(X) Sys Design, Dev & Integration*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2464: *DD(X) Sys Design, Dev & Integration*	1,282.551	101.724	45.642	140.500	-	140.500	120.412	15.966	0.000	0.000	0.000	1,706.795
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 197

A. Mission Description and Budget Item Justification

This project encompasses DDG 1000 development efforts required to deliver the Flight I DDG 1000 Class Ships. Major efforts include software requirements analysis, architectural and design code and unit testing, integration, qualification testing, and Independent Verification and Validation (IV&V) for Software Releases; execution of Integrated Power Systems (IPS) and ship control system testing and integration; Live Fire Test and Evaluation (LFT&E), Developmental Testing (DT), Integrated Testing (IT), and Operational Test (OT) in support of the Test and Evaluation Master Plan (TEMP) and development of Tactical Tomahawk Weapon Control System (TTWCS) software. Funding for previous years is included in PE 0604300N and under 0204202N Project Unit 4009, Advanced Gun System (AGS), on DD(X).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product / Software Development	51.906	12.942	72.180	0.000	72.180
Articles:	-	-	-	-	-
Description: Product Development/Software Development					
FY 2016 Accomplishments: Completed software Release 8 to support Sail Away. Developed, integrated, and tested, as required, corrections to Hull Mechanical & Electrical (HM&E) and Mission System code through completion of fully capable Software Delivery in FY16. Continued development of interface specifications of TTWCS. Continued Aircraft Handling and Securing System (AHSS) development and qualification.					
FY 2017 Plans: Continue development of interface specifications of TTWCS. Continue Aircraft Handling and Securing System (AHSS) development and qualification.					
FY 2018 Base Plans: Funding increased due to development and corrections to Post Release 8 software, which will provide critical capabilities in command and control (GCCS-M), Helicopter integration (MH-60R) and Link 16 interoperability with other fleet assets. Fund TTWCS Land Attack System Initiation Lab (LASIL) to add capability to test and certify					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0204202N / *DDG-1000*	**Project (Number/Name)** 2464 / *DD(X) Sys Design, Dev & Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
the interface between TTWCS and the TSCE/DDG 1000 combat system. Continuation of Aircraft Handling and Securing System (AHSS) development and qualification. ***FY 2018 OCO Plans:*** N/A					
Title: Test and Evaluation ***Articles:*** ***Description:*** Test and Evaluation Master Plan (TEMP) Execution ***FY 2016 Accomplishments:*** Continued Integration and Test of air warfare elements at Surface Combat System Center (SCSC) Wallops in preparation for conduct of Integrated Test B1-120 on Self Defense Test Ship (SDTS). Completed Integrated Test B4-160 A planning to conduct Radar Cross Section measurements. Initiated test planning for Developmental Test (DT), Integrated Test (IT), and Operational Test (OT) for all warfare areas. Initiated planning for characterization of Medium Frequency and High Frequency Sonars. Initiated test planning for Operational Evaluation (OPEVAL). Provided travel. ***FY 2017 Plans:*** Initiation of air warfare testing on Self Defense Test Ship (ITB1-120). Continuation of test planning for DT, IT, and OT for air warfare, joint fires, strike, surface warfare and survivability (radar cross section, acoustic, magnetic and Infrared signature testing). Continue to provide travel. ***FY 2018 Base Plans:*** Funding increase due to 5 test events that will require an increased level of execution. The tests are for ship signature measurements (radar cross section and infrared signatures), structural test firings for both the Vertical Launching System and the Advanced Gun System, and Anti-air warfare live fire test events on the Self Defense Test Ship (SDTS). The relevant test events are DTB4-160B, DTB4-161, DTB4-120, ITB4-610, and ITB1-120. Conduct Full Ship Shock Trial (FSST), SDTS AAW completion, Probability of Raid Annihilation (PRA) Test Bed and Integrated Testing. Continue to provide travel. ***FY 2018 OCO Plans:*** N/A	49.818 -	32.700 -	68.320 -	0.000 -	68.320 -
Accomplishments/Planned Programs Subtotals	101.724	45.642	140.500	0.000	140.500

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0204202N / *DDG-1000*	**Project (Number/Name)** 2464 / *DD(X) Sys Design, Dev & Integration*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OMN / 3B1K: *Specialized Skill Training*	1.018	1.041	3.046	-	3.046	3.110	3.169	3.234	3.299	0.000	45.882
• OPN / 0947: *DDG 1000 Class Support Equipment*	0.000	33.404	0.000	-	0.000	51.338	2.371	2.424	2.466	0.000	92.003
• PANMC / 0198: *LRLAP 155MM Long Range Land Attack Projectile*	4.540	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• OMN/15BUO: *Life Cycle Engineering (IWS))*	8.726	8.687	19.101	-	19.101	15.580	0.071	0.073	0.075	0.000	52.313
• OMN/15BR1: *DDG 1000 Life Cycle Engineering and Sustainment*	5.544	3.988	5.641	-	5.641	5.703	5.819	5.941	6.059	0.000	50.640
• RDTEN/0603795N: *Navy Guided Projectile*	0.000	0.000	18.000	-	18.000	0.000	0.000	0.000	0.000	0.000	18.000

Remarks

D. Acquisition Strategy

In October 2010 a revised acquisition strategy had been determined that supports the DDG-1000/DDG-51 restart shipyard allocation workload Memorandum of Agreements (MOAs). Execution of the MOAs shifted primary construction of all three DDG-1000 class ships to Bath Iron Works (BIW). Award of the DDG 1001/1002 to BIW occurred in September 2011.

E. Performance Metrics

Successfully complete Operational Test Readiness Review. Successfully complete Developmental Test/Integrated Test/Live Fire/Operational Test. Successfully achieve Initial Operational Capability.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0204202N / *DDG-1000*	Project (Number/Name) 2464 / *DD(X) Sys Design, Dev & Integration*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Ship Integration Development Software	SS/CPAF	Raytheon : Tewksbury MA	879.907	32.028	Dec 2015	0.000		52.780	Dec 2017	-		52.780	0.000	964.715	-
Ship Integration Development (Prod Dev), TTWCS /ASIST	SS/CPFF	Various : Various	45.468	19.878	Dec 2015	12.942	Dec 2016	19.400	Dec 2017	-		19.400	0.000	97.688	-
		Subtotal	925.375	51.906		12.942		72.180		-		72.180	0.000	1,062.403	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SDTS (ITB1-120) / PRA TB	SS/CPFF	Raytheon : Portsmouth, RI	102.797	10.525	Dec 2015	7.925	Dec 2016	6.500	Dec 2017	-		6.500	4.800	132.547	-
T&E Engineering	C/CPIF	CSC : Washington, DC	2.800	0.200	Dec 2015	0.200	Jan 2017	0.200	Dec 2017	-		0.200	0.200	3.600	-
SDTS/PRA/Integrated Test	Various	Various : Various	23.027	11.292	Nov 2015	8.745	Nov 2016	6.078	Nov 2017	-		6.078	5.411	54.553	-
Advanced Program	C/CPIF	NSMA : Arlington, VA	6.679	0.000		5.500	Nov 2016	4.400	Nov 2017	-		4.400	2.400	18.979	-
Eng/M&S/Cert Agents	WR	NSWC : Dahlgren, VA	7.727	0.200	Nov 2015	0.200	Nov 2016	0.200	Nov 2017	-		0.200	0.200	8.527	-
Integrated Test	WR	NSWC : Bethesda, MD	11.377	2.860	Nov 2015	1.096	Nov 2016	1.614	Nov 2017	-		1.614	1.825	18.772	-
HM&E Systems	WR	NSWC : Philadelphia, PA	0.000	0.100	Nov 2015	0.500	Nov 2016	0.250	Nov 2017	-		0.250	0.125	0.975	-
SDTS/PRA/Test Bed/ ESSM Engagement	Various	Various : Various	11.264	0.000		0.000		0.000		-		0.000	0.000	11.264	-
Threat Assesment/IR	C/CPIF	NRL : Washington, DC	0.000	0.000		0.000		1.400	Dec 2017	-		1.400	1.800	3.200	-
SDTS	WR	SCSC : Wallops, Is, VA	5.903	0.000		0.000		0.000		-		0.000	0.000	5.903	-
LFT&E	C/CPIF	ROI : Mullica Hills, NJ	7.950	0.000		0.000		0.000		-		0.000	0.000	7.950	-
ITB3/ITB4/OPEVAL	Various	Various : Various	0.000	0.000		0.000		16.092	Nov 2017	-		16.092	14.800	30.892	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0204202N / *DDG-1000*	Project (Number/Name) 2464 / *DD(X) Sys Design, Dev & Integration*	

Test and Evaluation ($ in Millions)

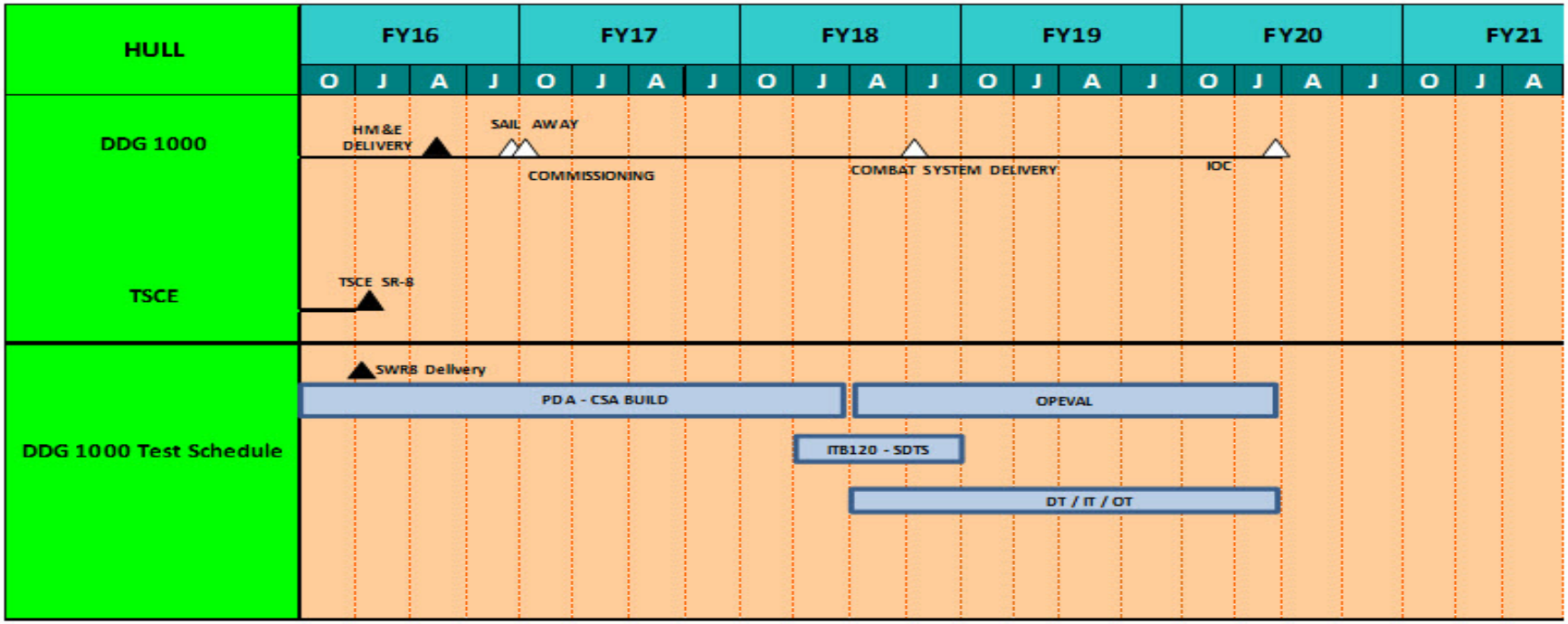
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integration and Testing	Various	Various : Various	0.000	8.230	Dec 2015	3.700	Nov 2016	0.023	Dec 2017	-		0.023	0.024	11.977	-
T&E Engineering	WR	COTF : Norfolk, VA.	6.631	2.200	Dec 2015	1.100	Dec 2016	2.516	Dec 2017	-		2.516	2.634	15.081	-
Int Test/Undersea Warfare	WR	Various : Various	0.000	0.747	Nov 2015	0.000		0.000		-		0.000	0.000	0.747	-
TTWCS	C/CPIF	NAVAIR : Not Specified	0.000	0.000		0.000		2.100	Mar 2018	-		2.100	3.600	5.700	-
Sonobouys	TBD	NAVAIR : Not Specified	0.000	0.000		0.000		0.000		-		0.000	0.650	0.650	-
LRLAP Test Article Procurement ITB3/ITB4 (EMD)	C/CPIF	BAE : Minneapolis, MN	54.064	0.000		0.000		0.000		-		0.000	0.000	54.064	-
LFT&E Engineering	C/CPIF	ROI : Mullica Hills, NJ	32.852	0.800	Dec 2015	0.000		1.600	Dec 2017	-		1.600	0.600	35.852	-
ESSM/SM2 Procurement	C/CPIF	Raytheon : Tucson, AZ	39.538	0.000		0.000		0.000		-		0.000	0.000	39.538	-
MOE Test Bed	WR	NUWC : Various	1.510	0.250	Nov 2015	0.000		1.469	Nov 2017	-		1.469	1.657	4.886	-
Component Shock Qualification	WR	Various : Various	0.000	0.000		0.000		7.000	Nov 2017	-		7.000	21.000	28.000	-
SDTS and Integrated Test	Various	PEO IWS : Washington, DC	39.072	8.914	Nov 2015	3.234	Nov 2016	14.978	Nov 2017	-		14.978	9.298	75.496	-
T&E Engineering	WR	NSWC : Panama City, FL	0.530	3.000	Nov 2015	0.000		0.900	Nov 2017	-		0.900	9.200	13.630	-
Travel	Various	NAVSEA : Washingotn, DC	3.455	0.500	Nov 2015	0.500	Apr 2017	1.000	Oct 2017	-		1.000	1.000	6.455	-
		Subtotal	357.176	49.818		32.700		68.320		-		68.320	81.224	589.238	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,282.551	101.724		45.642		140.500		-		140.500	81.224	1,651.641	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0204202N / *DDG-1000*	**Project (Number/Name)** 2464 / *DD(X) Sys Design, Dev & Integration*

*DDG 1000



KEY

IOC	INITIAL OPERATIONAL CAPABILITY
SR	SOFTWARE RELEASE
▲	COMPLETED EVENT
OPEVAL	OPERATIONAL EVALUATION
HM&E	HULL, MECHANICAL & ELECTRICAL
SDTS	SELF-DEFENSE TEST SHIP
PDA	POST DELIVERY AVAILABILITY
CSA	COMBAT SYSTEMS ACTIVATION

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0204202N / *DDG-1000*	**Project (Number/Name)** 2464 / *DD(X) Sys Design, Dev & Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2464				
Software Release 8	2	2016	2	2016
PDA - CSA Software Post Release 8	1	2016	2	2018
Conduct ITB1 - SDTS	2	2018	4	2018
DT / IT / OT	3	2018	2	2020
OPEVAL	3	2018	2	2020

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0304231N *I Tactical Command System - MIP*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	6.513	0.998	0.676	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.187
2009: *OSIS Evolutionary Development (OED)*	6.513	0.998	0.676	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.187

A. Mission Description and Budget Item Justification

Radiant Mercury (RM) is a secure information platform that provides an automated means to sanitize, downgrade, guard, and transliterate formatted data at various classifications, compartments and releasabilities. It enables Combatant Commanders as well as operational commanders, afloat and ashore to disseminate and receive critical operational and intelligence information with coalition and allied forces.

FY18: Trusted Information System (TIS) Radiant Mercury (RM) cross domain solution (CDS) requirement will no longer be centrally funded via PE 0304231N. This does not remove the cross domain solution (CDS) requirement, instead it transfers costs associated with RM and compliance with the CDS process to Programs of Record.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.998	0.676	1.200	-	1.200
Current President's Budget	0.998	0.676	0.000	-	0.000
Total Adjustments	0.000	0.000	-1.200	-	-1.200
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	-1.200	-	-1.200

Change Summary Explanation

Technical/Funding/Schedule:
- In FY18, Trusted Information System (TIS) Radiant Mercury (RM) Cross Domain Solution (CDS) funding responsibility was transferred to the requiring programs of record.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0304231N / *Tactical Command System - MIP*	Project (Number/Name) 2009 / *OSIS Evolutionary Development (OED)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2009: *OSIS Evolutionary Development (OED)*	6.513	0.998	0.676	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.187
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Trusted Information System (TIS) Radiant Mercury (RM) is a system that successfully provides accredited Cross Domain Solutions (CDS) to the Navy, the Department of Defense (DoD), and the Intelligence Community (IC). TIS RM is a critical component of network-centric warfare, supporting joint operations, allied, and coalition forces world-wide. The ability to pass sensitive and critical data across security domains and to our allied and coalition partners in a timely fashion can only be met by accredited CDS systems such as RM. RM enables the Navy to operate in a multi-national environment.

TIS RM provides automated, bi-directional sanitization, transliteration and guarding capability for formatted and unformatted data between security enclaves. RM helps ensure critical intelligence is provided quickly to operational decision-makers. TIS RM provides the capability to disseminate information for operating forces worldwide, including the operating forces of key allies in the Pacific, Central and European Command regions. This capability to move all-source intelligence-derived track information into the realm of the operational community significantly improves the situational awareness of tactical operators and planners. Unformatted data is handled by the Information Review Process (IRP). The system provides cross domain services to a wide variety of customers including Combatant Commanders, Air Force (Shared Early Warning program), Army (Blue Force Tracking Program), Missile Defense Agency (MDA), Navy Cyber Defense Operations Command (NCDOC), Naval Modular Automated Communication Systems (NAVMACS), Mobile User Objective Systems (MUOS), Navy (Global Command and Control System - Maritime/J (GCCS-M/J), Automatic Identification System (AIS), Maritime Operations Centers (MOC), Distributed Common Ground System-Navy (DCGS-N), Tactical Ranges (TR), and numerous other DoD and Intelligence agencies.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Radiant Mercury (RM)	0.998	0.676	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued the development and certification of Radiant Mercury (RM) Version 6.X. Certification process included Factory Acceptance Testing (FAT), alpha testing, and government testing. FAT included test procedure development to ensure all systems requirements are tested properly, dry-run testing to ensure the procedures are sufficient, and formal testing which will be witnessed by the government. Alpha testing was conducted by the Independent Verification and Validation (IV&V) team and is separate from the FAT. Upon successful FAT and alpha testing the software is provided to the National Security Agency (NSA) and Defense Intelligence					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304231N / *Tactical Command System - MIP*	**Project (Number/Name)** 2009 / *OSIS Evolutionary Development (OED)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Agency (DIA) government labs for the actual certification and testing event. In parallel to these testing activities, the software will also be provided to RM customers who maintain their own labs. ***FY 2017 Plans:*** Continue the development and certification of RM Version 6.X. ***FY 2018 Base Plans:*** In FY18, Trusted Information System (TIS) Radiant Mercury (RM) Cross Domain Solution (CDS) funding responsibility was transferred to the requiring programs of record. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.998	0.676	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN/2608: *Trusted Information System (TIS)*	0.284	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	11.779

Remarks

D. Acquisition Strategy

Trusted Information Systems (TIS) Radiant Mercury (RM) provides automated, bi-directional sanitization, transliteration and guarding capability for formatted and unformatted data between security enclaves. RM helps ensure critical Indications and Warning intelligence is provided quickly to operational decision-makers. RM provides certified and accredited Cross Domain capabilities in the Pacific Command (PACOM), Europe Command (EUCOM) and Central Command (CENTCOM), Northern Command (NORTHCOM), Areas of Responsibility (AOR). RM is a fee-for-service program, it receives partial funding from the Navy to cover development and and infrastructure costs. The remaining funds needed to keep the program operating are generated from a fee-for-service model which charges customers a Life Cycle Surcharge (LCS) on all new task orders and an Annual User Fee (AUF) on all operational RM systems currently fielded.

E. Performance Metrics

Radiant Mercury (RM) provides and develops certified, accredited Cross Domain Solutions (CDS) and transfer capabilities to the Department of Defense (DoD) and Intelligence Community (IC), and provides the capability to disseminate and receive operational and intelligence information for 100% of authorized sites.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0304785N / *Tactical Cryptologic Systems*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	275.994	17.785	36.747	28.311	-	28.311	37.850	34.765	46.945	49.378	Continuing	Continuing
2134.: *Shipboard IW Exploit*	275.994	17.785	36.747	28.311	-	28.311	37.850	34.765	46.945	49.378	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Shipboard Information Warfare (SIW) line includes the Ship's Signal Exploitation Equipment (SSEE) Family of Systems (FoS) which include Increment E, F (and its variants), Spectral (Increment G) and Modifications, and also the Integrated Communications Data Systems (ICADS) Increment I and Increment II systems. These programs are classified Information Warfare (IW) / Electronic Warfare (EW) tactical cryptologic systems supporting Command and Control, Battlespace Awareness, Integrated Fires and Electromagnetic Maneuver Warfare (EMW) modes of global engagement. These systems enable power projection in any environment including Anti-Access, Area Denial (A2AD) situations and provide offensive EW capabilities ensuring surface vessels ability to disrupt, deny, degrade and defeat adversary (state and non-state) use of the radio frequency spectrum while simultaneously providing advanced Information Related Capabilities (IRC). SSEE systems detect adversary radio frequency emissions and use them to provide critical tactical and strategic intelligence, situational awareness, and hostile threat assessment depriving the adversary of enhanced signals exploitation capability and limiting their ability to counter strike. The systems are incremental acquisition programs designed to pace adversary communications technology development by using Research, Development, Test & Evaluation (RDT&E) funding to rapidly develop and transition new technologies and provide new capabilities as Pre-Planned Product Improvements (P3I) upgrades into the system's hardware/software configuration via a net-centric Service Oriented Architecture (SOA). Funding will focus on developing and delivering expanded offensive IW / EW and future Cyberspace capabilities in accordance with Presidential direction and in support of multiple operational plans (OPLANS) and A2AD scenarios. ICADS Inc. II is a mission critical system providing advanced simulation capability for naval platforms as well as back-up communications capabilities. Additional details on this program are held at a higher classification level.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	17.785	36.747	29.025	-	29.025
Current President's Budget	17.785	36.747	28.311	-	28.311
Total Adjustments	0.000	0.000	-0.714	-	-0.714
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-0.714	-	-0.714

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0304785N *I Tactical Cryptologic Systems*

Change Summary Explanation

Impacts resulting from operational ship availability of the test platforms for the SSEE Modifications Initial Operational Test & Evaluation (IOT&E) caused the Full Rate Production (FRP) decision to be re-phased to QTR 1 FY 18. The delays to the ship availability timeline also caused Initial Operational Capability (IOC) to be re-phased to QTR 3 FY 18 based on the definition in the program's Acquisition Strategy for Initial Operational Capability (IOC) declaration. Ship's Signal Exploitation Equipment (SSEE) Modifications Full Rate Production deliveries have been aligned with current ship availabilities. Impacts from prolonged service-level (Navy) requirements review of the Spectral Capability Development Document (CDD) and approval to build an Agile Acquisition model resulted in moving the Milestone B decision to QTR 3 FY18. The Agile Acquisition model includes transitioning capability requirements from the CDD into technical requirements to inform Requirements Development Package (RDP) 1. It also includes moving the development contract award to QTR 1 FY 19 and Build Technical Review 1 to QTR2 FY 19, with Fleet Capability Review to begin in QTR 2 FY 19 and Field Technical Review 1 beginning in QTR 1 FY 21. Funds are required to continue efforts to define, develop, and refine additional Navy and Joint requirements to integrate Ship Signal Exploitation Space with the rest of the shipboard combat systems, synthesizing inputs from all sensor areas for an Integrated Fires approach to naval warfare and integrating Anti-Access, Area Denial capabilities into the Spectral design, and build the technical requirements traceability matrices needed to inform the Technical Design Packages for Engineering Design Model (EDM) development.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0304785N / *Tactical Cryptologic Systems*	Project (Number/Name) 2134. / *Shipboard IW Exploit*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2134.: *Shipboard IW Exploit*	275.994	17.785	36.747	28.311	-	28.311	37.850	34.765	46.945	49.378	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Shipboard Information Warfare (SIW) line includes the Ship's Signal Exploitation Equipment (SSEE) Family of Systems (FoS) which include Increment E, F (and its variants), Spectral (Increment G) and Modifications, and also the Integrated Communications Data Systems (ICADS) Increment I and Increment II systems. These programs are Classified Information Warfare (IW) / Electronic Warfare (EW) tactical cryptologic systems supporting all facets of Assured Command and Control, Battlespace Awareness, Integrated Fires and Electromagnetic Maneuver Warfare modes of global engagement. These systems, including their variants, provide battle group and combatant commanders with real-time indications and warnings by acquisition ("Find") and localization ("Fix") of Signals of Interest (SOI) as well as the Surface Fleet's only EW non-kinetic capabilities ("Finish"). The SSEE Increment F variants bring a new dimension of afloat Signals Intelligence (SIGINT) capabilities to legacy platforms while providing advanced scalability and modularity for mission planners to execute with. As an incremental acquisition program, Research, Development, Test & Evaluation (RDT&E) funding is required to rapidly develop and integrate new technologies and associated new operational capabilities to pace both known and future signal threats and transition as Pre-Planned Product Improvements (P3I) upgrades into the system's hardware/software configuration and deliver to fielded systems via annual build releases. This program's funding incorporates P3I, new Commercial Off-the-Shelf (COTS) or Government-Off-the-Shelf (GOTS) based technologies and software into the existing systems to address Fleet needed priorities, capability gaps or combat known threats. Funding also focuses on developing and delivering expanded non-kinetic EW capabilities and net-centric Service Oriented Architecture (SOA), as well as meet intended interoperability objectives through Fleet defined Common Core Architectures (CCA) to enable application hosting services; all in accordance with Presidential direction and strategic objectives while also in support multiple operational plans (OPLANS), Concepts of Operations (CONOPS) and A2AD scenarios (further details held at a higher classification level). SIW will continue development and integration of Anti-Access, Area Denial (A2AD) solutions for the SSEE Increment F and Modifications systems as well as bring enhanced signals exploitation and expanded SOI processing capabilities to fielded systems.

Funding supports development and integration efforts to fuse data produced and distributed by Shipboard IW/Information Operations (IO) systems with other intelligence data at multiple classification levels and provided to shipboard combat systems to support kinetic and non-kinetic fires and can also be used to enable a more complete understanding and more agile and effective exploitation of the electromagnetic spectrum.

FY 18 funding for SSEE Increment F (and its variants) will continue to develop, refine, and test new, unexplored and unexploited cyber capabilities as well as begin integration of solutions to incorporate other Navy development investments to enhance the Fleet's ability to dominate and defend cyberspace mediums and insert new technology enhancements via incremental software and hardware upgrades and deliver as annual build releases. Specifically, it will finalize designs and testing in support of software and hardware development for VITA 49 / VPX Next-Generation Chassis designs to provide enhanced data processing, and greater exposure of existing system services while meeting constricting Space, Weight, Power and Cooling (SWPaC) requirements on ships and deliver advanced capabilities to integrate hosting services to platforms, bringing a modular, mission-tailorable capability specifically required for National/Tactical integration. It will also develop solutions to meet future Joint interface and compliance standards (4.X) to meet netted sensor framework strategies and deliver enhanced automation capabilities to expedite sensor

tasking and control and ease operator workflows. It will also meet netted sensor framework strategies and deliver enhanced automation capabilities to expedite sensor tasking and control while easing operator workflows. Integrate Anti-Access, Area Denial (A2AD) capabilities into system configuration.

FY 18 funding for Spectral will continue acquisition activities, systems engineering, logistics, test planning and contracting activities in support of a Milestone B decision. Development efforts will continue for Engineering Design Models (EDM)s and refine requirements, technical data packages and matrices for Requirements Development Package (RDP) approval and Build Decision (BD) 1. Spectral will integrate and improve upon all aspects of Ship's Signal Exploitation Equipment(SSEE)Increment F, leveraging SSEE Increment F software and technologies to increase automation and integration into Ships Signals Exploitation Space (SSES) while advancing and incorporating new technologies through open architecture for rapid integration and development of new capabilities with enhanced interfaces to Ship's Combat and Intelligence systems. Funding also executes studies, analysis and engineering efforts for market research to support Advanced Radio Frequency (RF) aperture development and integration to satisfy Fleet needs for multi-mission antennas and control modules as part of the Spectral requirement.

FY 18 funding for SSEE Modifications support achieving the Initial Operating Capability (IOC) milestone as defined in the program acquisition strategies and will execute hardware and software development to bring advanced capability to the Fleet for simultaneous detection, collection, processing, electronic warfare and display of communication intelligence data from hostile, high threat and adversary platforms in select extended frequency ranges not prosecuted today, as well as complete final designs and testing to bring advanced signal processing to the Next Generation-GRAYWING capability while migrating to meet future industry backplane standards to align with Common Core Architecture (CCA) strategies.

Integrated Communications and Data Systems Increment II (ICADS Inc. II) is a mission critical system providing advanced simulation capabilities and back-up communications for naval platforms with additional details held at higher classification. To support Commander, US Pacific Fleet (COMPACFLT) requirements outlined in the Capability Production Document, FY 18 funding will continue acquisition activities and finalize engineering designs by delivering Engineering Design Model 1, executing Increment II Integration and Developmental Testing (IT/DT), and prepare for Operational Assessment (OA) in support of Low-Rate Initial Production (LRIP) decisions. Funding will also enable Technical Design Package (TDP) development for production contract award in FY 19.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Ship's Signal Exploitation Equipment Inc F (SSEE Inc F)	2.759	7.775	4.487	0.000	4.487
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued pre-planned product improvements to provide enhanced and additional capabilities into the SSEE Increment F system. Expanded Signals of Interest (SOI) processing capabilities to allow collection of the newest high priority modern technology threat signals for tightly integrated IO/non-kinetic capabilities in support of time critical military strike operations and subsequent processing and analysis for timely and accurate situational awareness for force protection. Developed and delivered Electronic Warfare (EW) capabilities based upon the warfighter identified FY16 SOI threats (annually-updated) for integration into the SSEE Increment F system. Developed enhanced Red Falcon systems to combat both current and future SOIs. Enhanced SSEE					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Increment F remoting capabilities and usability by providing increased functionality and capabilities along with delivering streamlined user interfaces to remote and local users. Maintained cognizance of current warfighter-identified signal sets and made additions and improvements to the system as required by National and Fleet stakeholders.and improvements to the system as required by National and Fleet stakeholders. ***FY 2017 Plans:*** Continue pre-planned product improvements (P3I) to provide enhanced or additional capabilities into the Ship's Signal Exploitation Equipment (SSEE) Increment F system. Develop and deliver EW capabilities based upon the warfighter identified FY 17 SOI threats (annually-updated) for integration into the SSEE Increment F system and deliver into annual build release. Expand Signal of Interest (SOI) Directional Finding (DF), processing, and exploitation capabilities to allow collection of the newest high priority modern technology threat signals across multiple frequency bands for tightly integrated IO/non-kinetic capabilities while opening the SSEE system architecture for enhanced collaborative development and future capability integration. Initiate VITA 49 / VPX Next-Generation Chassis development designs to provide enhanced data processing, and greater exposure of existing system services while meeting constricting Space, Weight, Power and Cooling (SWaPC) requirements on ships and deliver advanced capabilities to integrate hosting services to platforms and bring an expanded modular, mission-tailorable capability specifically required for National/Tactical integration. Begin developing Anti-Access, Area Denial (A2AD) capabilities such as the enabling operations in Global Positioning System (GPS)-denied environments and bring Carrier Strike Group self-actualization tools such as Own Force Monitoring (OFM) and integrate into the SSEE Systems to enable maritime power projection and surface vessels to disrupt, deny, degrade and defeat adversary (state and non-state) use of the radio frequency spectrum, improving the Fleet's ability to communicate and operate therein - further details held at a higher classification level. ***FY 2018 Base Plans:*** Continue pre-planned product improvements (P3I) to develop and deliver Electronic Warfare (EW) capabilities based upon the warfighter identified FY18 SOI threats (annually-updated) for integration into the SSEE Increment F system and deliver into annual build release. Develop, refine, and test new, unexplored and unexploited cyber capabilities as well as begin integration solutions to incorporate other Navy development investments to enhance the Fleet's ability to dominate and defend cyberspace mediums and insert new technology enhancements via incremental software and hardware upgrades. It will finalize designs and testing in support of software and hardware development for Next-Generation Chassis designs to meet constricting Space, Weight, Power and Cooling (SWPaC) requirements on ships while delivering advanced capabilities to integrate hosting services to platforms, bringing a modular, mission-tailorable capability specifically required for National/					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Tactical integration. It will also develop solutions to meet future Joint interface and compliance standards such as the Airborne Overhead Interoperability Office (AOIO) JICD 4.X standard and to meet netted sensor framework strategies and deliver enhanced automation capabilities to expedite sensor tasking and control and ease operator workflows. Integrate Anti-Access, Area Denial (A2AD) capabilities into system configuration. ***FY 2018 OCO Plans:*** N/A					
Title: Spectral (SSEE Inc G) ***Articles:*** ***FY 2016 Accomplishments:*** Completed service specific-level (Navy) requirements adjudication via the Capability Development Document (CDD) and continued acquisition documentation development to support Milestone B decision in FY18. Executed administrative activities in support of the development contract award. ***FY 2017 Plans:*** Continue efforts to center on synthesizing requirements into system designs to be developed under the first Fleet Capability Review (FCR). Complete Joint review of CDD requirements. Program will work to gain a viable Requirements Development Package (RDP) derived from the program CDD in support of the FCR. Initiate developing Technical Design Packages for design of the Engineering Design Models (EDM) and continue acquisition document preparation to support future FCR build cycles and future Milestone Decision reviews. Design efforts will focus on integrating Ship Signal Exploitation Space with the rest of the shipboard combat systems, synthesizing inputs from all sensor areas for an Integrated Fires approach to naval warfare. Funding will also support integrating Anti-Access, Area Denial capabilities into the Spectral design. ***FY 2018 Base Plans:*** Continue acquisition activities, systems engineering, logistics, test planning (including a finalized Test & Evaluation Master Plan (TEMP)) and contracting activities in support of a Milestone B decision activities as well as continue development efforts to create Engineering Design Models (EDM)s and refine requirements, technical data packages and matrices for Requirements Development Package (RDP) approval and Build Decision (BD) 1. Refine Anti-Access, Area Denial (A2AD) capabilities to be incorporated into future FCR baseline releases. Increase in FY18 funding to support studies, analysis and engineering efforts for market research to support Advanced RF aperture development and integration to satisfy Fleet needs for multi-mission antennas and control modules as part of the Spectral requirement. Increase in FY18 will also expand upon the Information Warfare (IW) / Electronic Warfare (EW) and tactical cryptologic system capability of exploiting signals throughout	4.787 -	9.418 -	11.026 -	0.000 -	11.026 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
the Radio Frequency (RF) spectrum, in addition to focusing new technologies towards new and previously unexplored/unexploited cyber capabilities as we integrate into the Integrated Fires (IF) architecture and develop enhanced interfacing to interoperate with Ship's Combat and Intelligence systems. ***FY 2018 OCO Plans:*** N/A					
Title: Integrated Communications and Data Systems Increment II (ICADS Inc II) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** Initiate Program of Record (POR) acquisition activities, begin development and design efforts for Increment II Engineering Design Models (EDM). Funding will develop, integrate and mature system design while executing requisite design reviews to support Commander US Pacific Fleet (COMPACFLT) requirements. ***FY 2018 Base Plans:*** Continue acquisition activities to support milestone decisions. Complete Increment II design and deliver EDM 1 for testing cycles and initiate Integrated Testing (IT) as part of the Engineering and Manufacturing Phase. ***FY 2018 OCO Plans:*** N/A	0.000 -	9.500 -	8.000 1	0.000 -	8.000 1
Title: Ship's Signal Exploitation Equipment Modifications (SSEE Modifications) ***Articles:*** ***FY 2016 Accomplishments:*** Completed Ship's Signal Exploitation Equipment (SSEE) Modifications Phase 3 hardware and software development to provide capabilities to the Fleet in support of "Ballistic Missile Defense (BMD) Executive Committee (EXCOM) Anti-Submarine Warfare (ASW) Chief of Naval Operations (CNO) Executive Board Information Operation (IO) Countermeasure Red Flash/Medusa" including additional Signals of Interest (SOI) in support of Fleet needs; and enhanced system capabilities for Graywing and Paragon to meet Full Rate Production (FRP) performance thresholds and provide P3I improvements. Continued to support development efforts enabling more robust signal exploitation and expanded integration with Ship's Signal Exploitation Equipment (SSEE) Increment F special capabilities. Provided test plans and procedures for follow on testing	10.239 -	10.054 -	4.798 -	0.000 -	4.798 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and evaluation. Conducted Developmental Testing (DT) as well as Initial Operational Test & Evaluation (IOT&E). Attained Joint Integration Test Command (JITC) certification. Continued to conduct extensive integration and testing in support of the correction of deficiencies identified during test events. ***FY 2017 Plans:*** Complete SSEE Modifications Build 11 hardware and software development and release. SSEE Modifications will transition to annual Build releases post Full Rate Production decision to provide capabilities to the Fleet in support of "BMD EXCOM ASW CEB IO Countermeasure Red Flash" including additional SOIs in support of Fleet needs; and enhanced system capabilities for Graywing and Paragon in order to meet Full Rate Production performance thresholds and provide P3I improvement. Continue to support development efforts to enable more robust signal exploitation and expand integration with SSEE Increment F special capabilities. Initiate designs to bring advanced signal processing and exploitation to the Next Generation-GRAYWING capability. Begin development and integration of Anti-Access, Area Denial (A2AD into the SSEE Systems to enable maritime power projection and surface vessels to disrupt, deny, degrade and defeat adversary (state and non-state) use of the radio frequency spectrum, improving the Fleet's ability to communicate and operate therein - further details held at a higher classification level. ***FY 2018 Base Plans:*** Achieve Initial Operating Capability (IOC) milestone as defined in the program acquisition strategies. Execute hardware and software development to bring advanced capability to the Fleet for simultaneous detection, collection, processing, electronic warfare and display of communication intelligence data from hostile, high threat and adversary platforms in select extended frequency ranges not prosecuted today, as well as complete final designs and testing to bring advanced signal processing to the Next Generation-GRAYWING capability while migrating to meet future industry backplane interconnectivity standards to align with (Common Core Architecture (CCA) strategies. Continue development and integration of Anti-Access, Area Denial (A2AD) solutions as well as bring enhanced Signals exploitation and expanded SOI processing capabilities to fielded systems. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	17.785	36.747	28.311	0.000	28.311

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPN / 2360: *Shipboard IW Exploit*	138.002	170.733	175.007	-	175.007	216.842	213.507	262.806	293.953	Continuing	Continuing

Remarks

D. Acquisition Strategy

Acquisition, management and contracting strategies support engineering, manufacturing development and production by providing funds to a Prime Contractor and Space & Naval Warfare Systems Command (SPAWAR) Systems Center (SSC) - Atlantic, SPAWAR Systems Center - Pacific and miscellaneous contractors, with management and contract oversight by SPAWAR HQ.

E. Performance Metrics

Ship's Signal Exploitation Equipment (SSEE) Increment F will incorporate pre-planned product improvements to provide enhanced or additional capabilities into the system to increase performance and capability while maximizing value to the Navy. SSEE Increment F improvements along with the addition of the SSEE Modifications and Medusa capabilities will expand signals of interest processing capability to allow collection of the newest high priority modern technology threat signals for tightly integrated IO/non-kinetic capabilities in support of time critical military strike operations and subsequent processing and analysis for timely and accurate situational awareness for force protection.. Paragon is a classified Navy tactical signals intelligence frequency extension capability that will be integrated into Ship's Signal Exploitation Equipment Increment E and F programs. Spectral will expand upon the IW / Electronic Warfare and tactical cryptologic system capability of exploiting signals throughout the Radio Frequency (RF) spectrum, in addition to focusing new technologies towards new and previously unexplored/unexploited cyber capabilities as we integrate into the Electromagnetic Maneuver Warfare (EMW) Integrated Fires (IF) architecture.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0304785N / *Tactical Cryptologic Systems*	Project (Number/Name) 2134. / *Shipboard IW Exploit*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development Prior Years	Various	Various : Various	158.330	0.000		0.000		0.000		-		0.000	0.000	158.330	-
Systems Engineering	C/CPAF	Classified Contract : Classified Contract	7.318	1.500	Jan 2016	3.500	Dec 2016	2.765	Dec 2017	-		2.765	Continuing	Continuing	Continuing
Systems Engineering	WR	SSC PAC : San Diego, CA	3.778	0.500	Nov 2015	1.125	Oct 2016	0.889	Oct 2017	-		0.889	Continuing	Continuing	Continuing
Systems Engineering	WR	SSC LANT : Charleston, SC	5.016	0.551	Nov 2015	1.300	Oct 2016	1.027	Oct 2017	-		1.027	Continuing	Continuing	Continuing
Training Development	C/CPFF	Classified Contracts : Classified Contracts	0.000	0.000		0.000		0.265	Dec 2017	-		0.265	Continuing	Continuing	Continuing
Configuration Management	WR	SSC LANT : Charleston, SC	0.000	0.000		0.000		0.790	Oct 2017	-		0.790	Continuing	Continuing	Continuing
Training Development	WR	SSC LANT : Charleston, SC	0.000	0.000		0.000		0.224	Oct 2017	-		0.224	Continuing	Continuing	Continuing
Integrated Logistic Support	WR	SSC LANT : Charleston, SC	0.000	0.000		0.000		0.632	Oct 2017	-		0.632	Continuing	Continuing	Continuing
Requirements Analysis	WR	SSC LANT : Charleston, SC	0.000	0.000		0.000		0.395	Oct 2017	-		0.395	Continuing	Continuing	Continuing
Studies & Design	WR	SSC PAC : Charleston, SC	0.000	0.000		0.000		0.790	Oct 2017	-		0.790	Continuing	Continuing	Continuing
Requirements Analysis	C/CPFF	Classified Contracts : Classified Contracts	0.000	0.000		0.000		1.027	Dec 2017	-		1.027	Continuing	Continuing	Continuing
Government Engineering Support	WR	SSC LANT : Charleston, SC	0.000	0.000		0.000		0.346	Oct 2017	-		0.346	Continuing	Continuing	Continuing
Government Engineering Support	WR	SSC PAC : San DIego, CA	0.000	0.000		0.000		0.295	Oct 2017	-		0.295	Continuing	Continuing	Continuing
Integration, Assembly & Test (PMP Dev)	WR	SSC PAC : San Diego, CA	2.675	0.668	Jan 2016	1.300	Oct 2016	1.027	Oct 2017	-		1.027	Continuing	Continuing	Continuing
Primary Hardware Development	C/CPFF	Classified Contracts : Classified Contracts	0.000	0.000		0.510	Dec 2016	1.026	Dec 2017	-		1.026	Continuing	Continuing	Continuing
Hardware/Software Development	WR	NRL : Washington, DC	2.010	0.250	Nov 2015	0.550	Oct 2016	0.435	Oct 2017	-		0.435	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0304785N / *Tactical Cryptologic Systems*	Project (Number/Name) 2134. / *Shipboard IW Exploit*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	C/CPAF	Classified Contracts : Classified Contracts	30.085	5.334	Mar 2016	12.874	Dec 2016	8.933	Dec 2017	-		8.933	Continuing	Continuing	Continuing
Software Development	WR	SSC PAC : San Diego, CA	1.439	0.141	Nov 2015	0.257	Oct 2016	0.203	Oct 2017	-		0.203	Continuing	Continuing	Continuing
Integration, Assembly & Test	C/CPAF	Classified Contracts : Classified Contracts	2.291	0.580	Jan 2016	0.363	Dec 2016	0.287	Dec 2017	-		0.287	Continuing	Continuing	Continuing
Software Development	WR	SSC LANT : Charleston, SC	0.060	0.086	Nov 2015	0.147	Oct 2016	0.116	Oct 2017	-		0.116	Continuing	Continuing	Continuing
Integration, Assembly & Test (PMP Dev)	WR	SSC LANT : Charleston, SC	0.462	0.461	Nov 2015	0.700	Oct 2016	0.553	Oct 2017	-		0.553	Continuing	Continuing	Continuing
		Subtotal	213.464	10.071		22.626		22.025		-		22.025	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Prior Years	Various	Various : Various	4.327	0.000		0.000		0.000		-		0.000	0.000	4.327	-
Training Development	C/CPFF	Classified Contract : Classified Contract	1.160	0.223	Jan 2016	0.335	Dec 2016	0.000		-		0.000	0.000	1.718	-
Integrated Logistics Support	C/CPFF	Classified Contract : Classified Contract	0.410	0.214	Jan 2016	0.425	Dec 2016	0.593	Dec 2017	-		0.593	Continuing	Continuing	Continuing
Configuration Management	WR	SSC Lant : Charleston, SC	1.779	0.181	Nov 2015	0.302	Oct 2016	0.000		-		0.000	0.000	2.262	-
Configuration Management	WR	SSC PAC : San Diego, CA	0.671	0.169	Nov 2015	0.345	Oct 2016	0.672	Oct 2017	-		0.672	Continuing	Continuing	Continuing
Technical Data	WR	SSC PAC : San Diego, CA	1.710	0.297	Nov 2015	0.500	Oct 2016	0.000		-		0.000	0.000	2.507	-
Training Development	WR	SSC LANT : Charleston, SC	0.278	0.110	Nov 2015	0.283	Oct 2016	0.000		-		0.000	0.000	0.671	-
Integrated Logistic Support	WR	SSC LANT : Charleston, SC	0.462	0.242	Nov 2015	0.510	Oct 2016	0.000		-		0.000	0.000	1.214	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0304785N / *Tactical Cryptologic Systems*	Project (Number/Name) 2134. / *Shipboard IW Exploit*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	C/CPFF	Classified Contract : Classified Contract	0.000	0.000		0.000		1.822	Dec 2017	-		1.822	Continuing	Continuing	Continuing
Requirements Analysis	WR	SSC LANT : Charleston, SC	0.085	0.169	Jan 2016	0.300	Oct 2016	0.000		-		0.000	0.000	0.554	-
Studies & Design	WR	SSC PAC : San Diego, CA	0.284	0.395	Nov 2015	1.000	Oct 2016	0.000		-		0.000	0.000	1.679	-
Studies & Design	C/CPFF	Classified Contract : Classified Contract	0.362	0.364	Mar 2016	0.600	Dec 2016	0.474	Dec 2017	-		0.474	Continuing	Continuing	Continuing
Studies & Design	WR	NAVSEA : NAVSEA	0.245	0.000		0.000		0.000		-		0.000	0.000	0.245	-
Requirements Analysis	C/CPFF	Classified Contract : Classified Contract	0.704	0.717	Mar 2016	1.300	Dec 2016	0.000		-		0.000	0.000	2.721	-
		Subtotal	12.477	3.081		5.900		3.561		-		3.561	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation Prior Years	Various	Various : Various	14.537	0.000		0.000		0.000		-		0.000	0.000	14.537	-
Developmental Test & Evaluation	WR	SSC PAC : San Diego, CA	2.371	0.858	Nov 2015	1.100	Oct 2016	0.550	Oct 2017	-		0.550	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	SSC LANT : Charleston, SC	1.490	0.249	Nov 2015	0.421	Oct 2016	0.211	Oct 2017	-		0.211	Continuing	Continuing	Continuing
Developmental Test & Evaluation	C/CPFF	Classified Contracts : Classified Contracts	1.423	0.598	Feb 2016	1.000	Dec 2016	0.500	Dec 2017	-		0.500	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NSWC Dahlgren : Dahlgren, VA	0.245	0.242	Nov 2015	0.000	Oct 2016	0.000		-		0.000	0.000	0.487	-
		Subtotal	20.066	1.947		2.521		1.261		-		1.261	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

Management Services ($ in Millions)

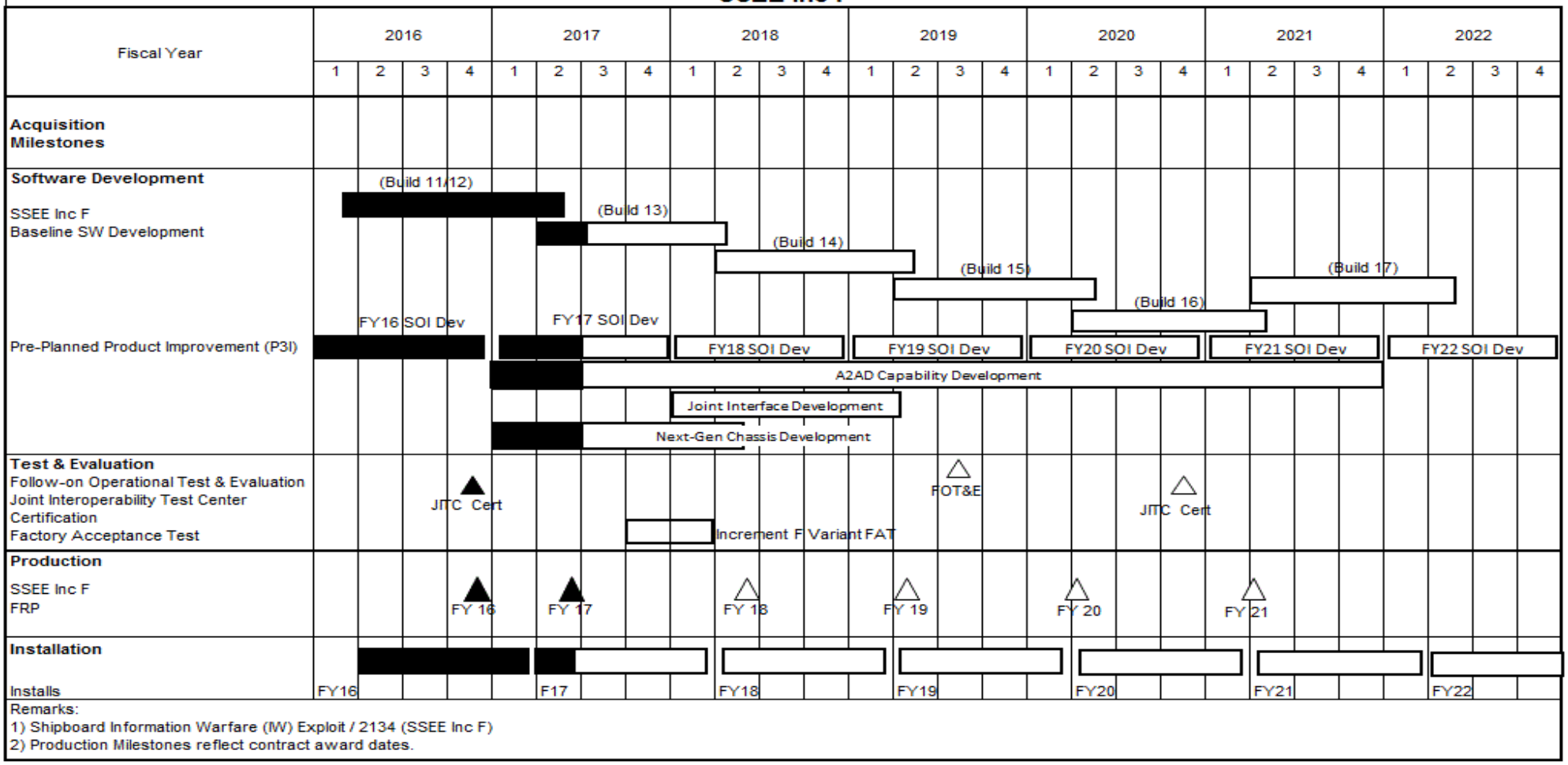
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services Prior Years	Various	Various : Various	18.496	0.000		0.000		0.000		-		0.000	0.000	18.496	-
Contractor Engineering Support	C/CPFF	Classified Contract : Classified Contract	3.306	1.061	Nov 2015	2.306	Dec 2016	0.000		-		0.000	0.000	6.673	-
Government Engineering Support	WR	SSC LANT : Charleston, SC	1.563	0.170	Nov 2015	0.438	Oct 2016	0.000		-		0.000	0.000	2.171	-
Government Engineering Support	WR	SSC PAC : San Diego, CA	1.910	0.145	Nov 2015	0.374	Oct 2016	0.000		-		0.000	0.000	2.429	-
Program Management Support	C/CPFF	Classified Contract : Classified Contract	1.749	0.478	Nov 2015	0.900	Dec 2016	0.711	Dec 2017	-		0.711	Continuing	Continuing	Continuing
Program Management Support	WR	SSC LANT : Charleston, SC	0.702	0.193	Nov 2015	0.497	Oct 2016	0.397	Oct 2017	-		0.397	Continuing	Continuing	Continuing
Travel	WR	SPAWAR : San Diego, CA	2.261	0.040	Nov 2015	0.450	Oct 2016	0.356	Oct 2017	-		0.356	Continuing	Continuing	Continuing
Studies & Design	FFRDC	Classified Contracts : Pittsburgh, PA	0.000	0.599	Jul 2016	0.735	Dec 2016	0.000		-		0.000	0.000	1.334	-
		Subtotal	29.987	2.686		5.700		1.464		-		1.464	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	275.994	17.785		36.747		28.311		-		28.311	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

SSEE Inc F



Remarks:
1) Shipboard Information Warfare (IW) Exploit / 2134 (SSEE Inc F)
2) Production Milestones reflect contract award dates.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

Spectral (SSEE Inc G)

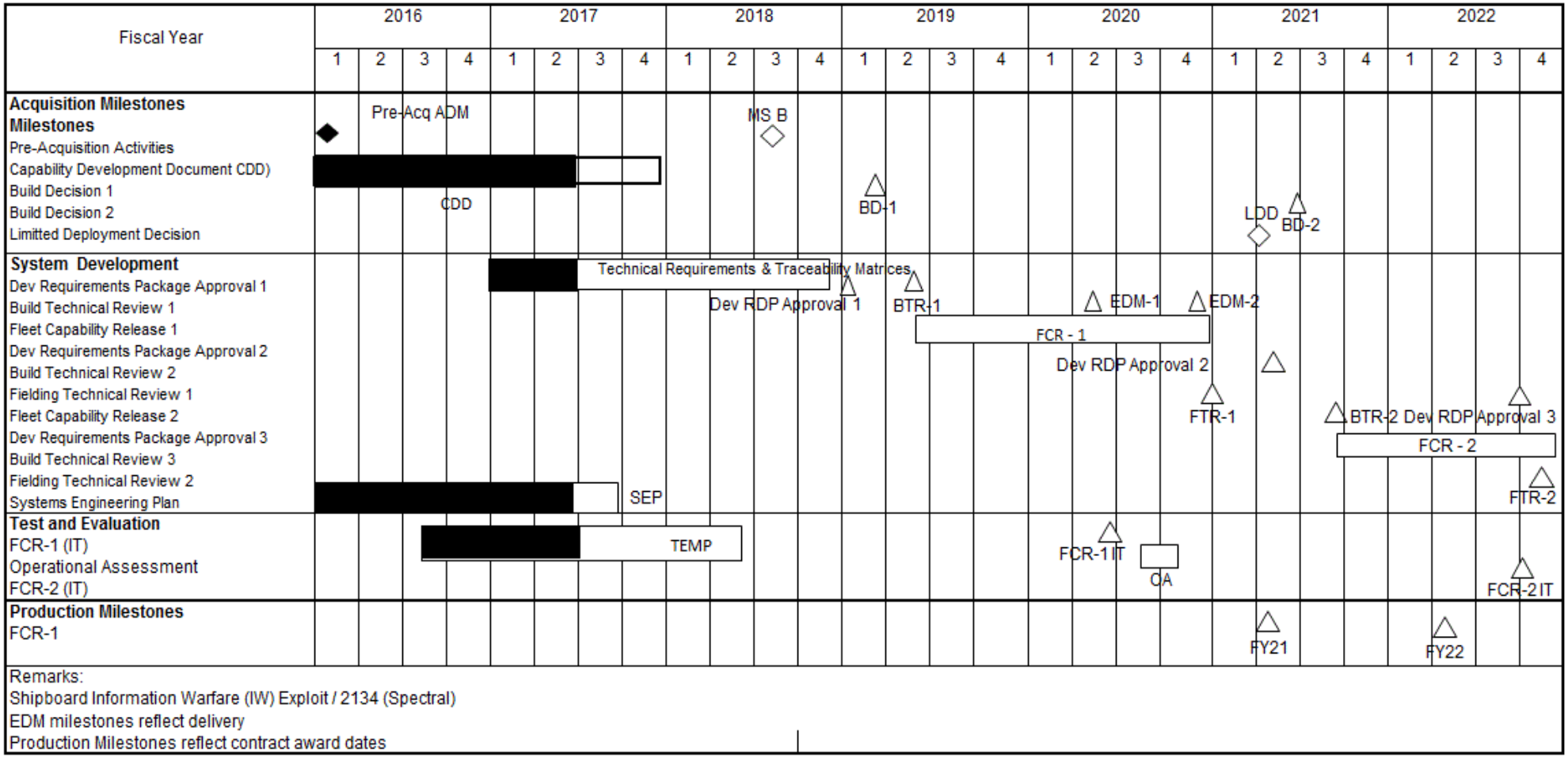
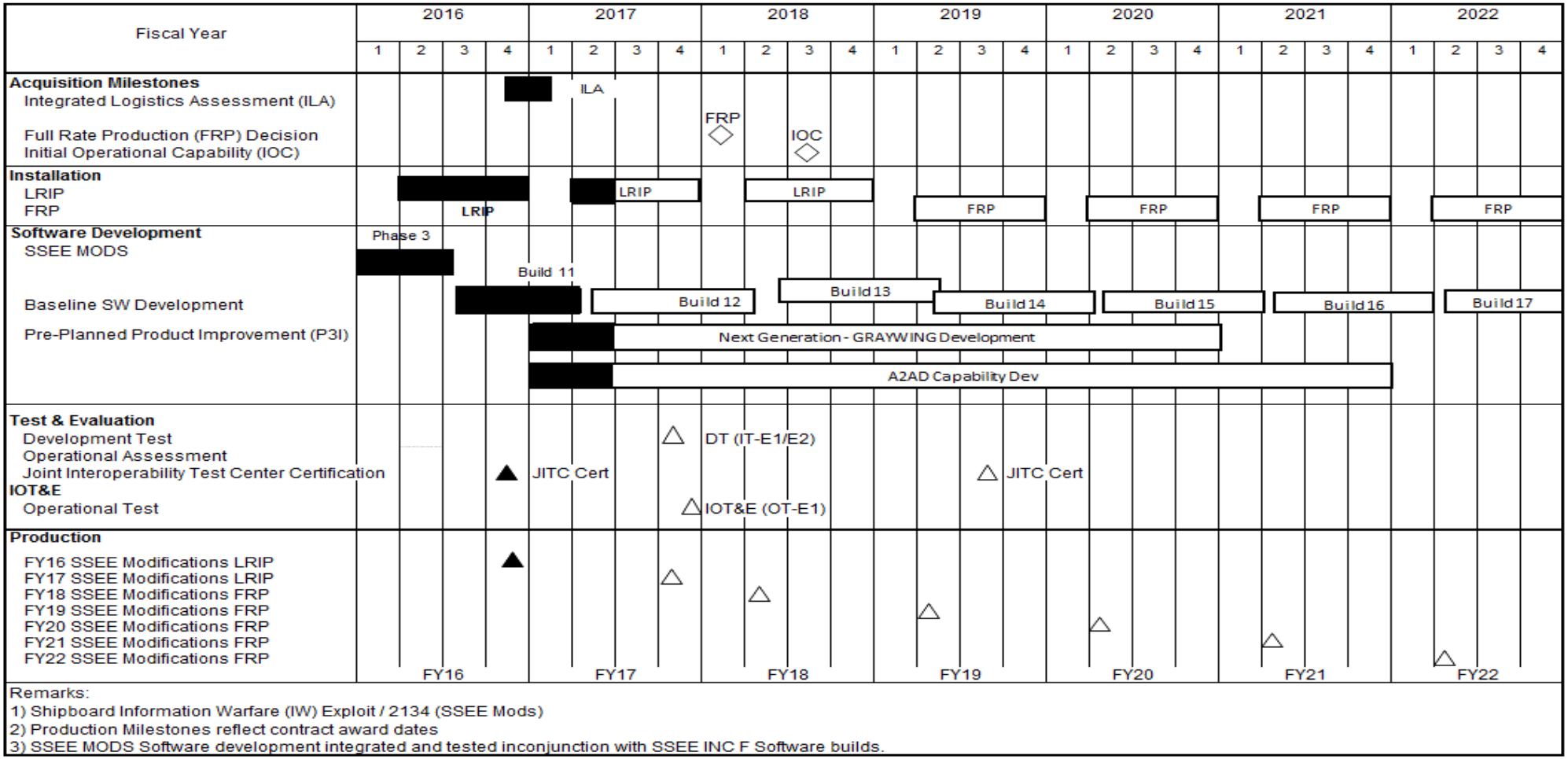


Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

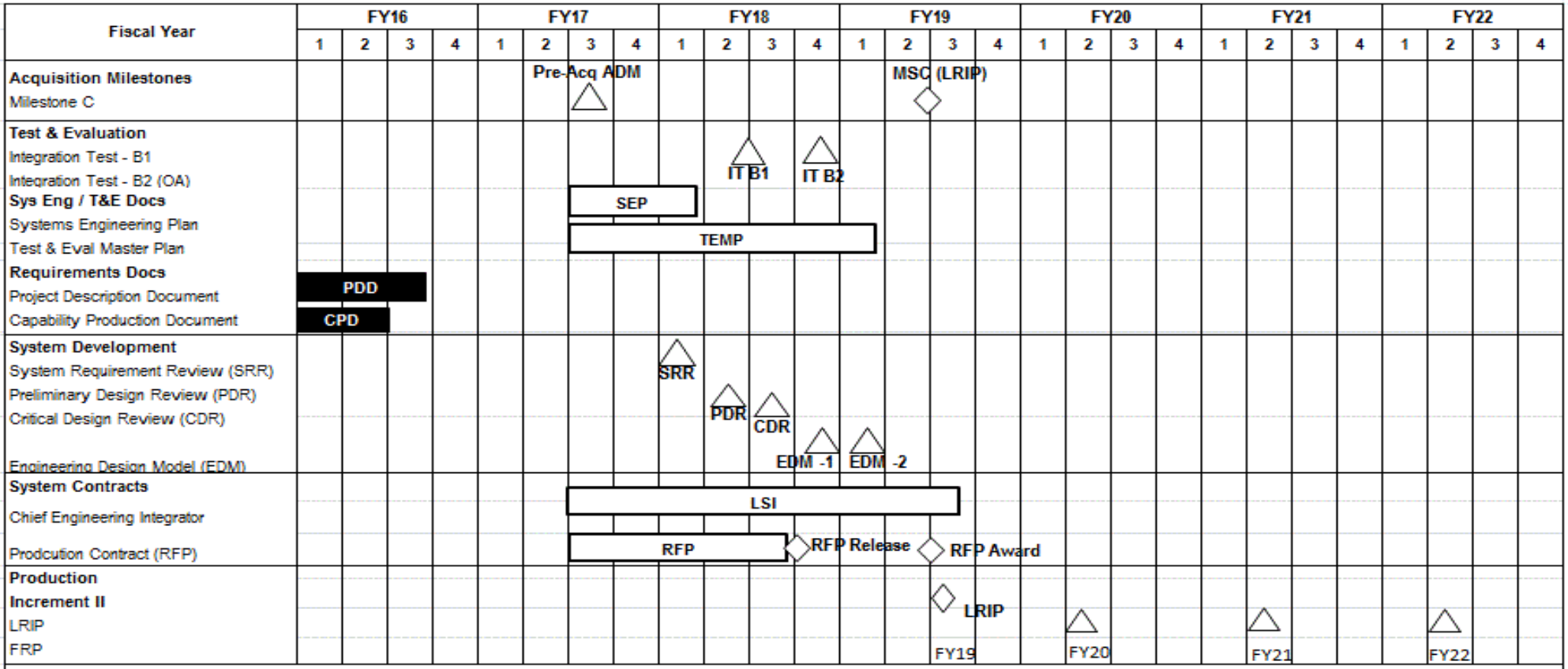
SSEE Mods



Remarks:
1) Shipboard Information Warfare (IW) Exploit / 2134 (SSEE Mods)
2) Production Milestones reflect contract award dates
3) SSEE MODS Software development integrated and tested inconjunction with SSEE INC F Software builds.

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

ICADS INC II



Remarks:

1) Shipboard Information Warfare (IW) Exploit / 2134 (ICADS Inc II)
2) Production Milestones reflect contract award dates
3) Program will add resources to make up schedule delays due to New Start classification under CRA.

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SSEE Inc F				
Inc F - Joint Integration Test Command (JITC) Certification (FY16)	4	2016	4	2016
Inc F - Joint Integration Test Command (JITC) Certification (FY20)	4	2020	4	2020
Inc F - Factory Acceptance Test (Inc F Variant)	4	2017	1	2018
Inc F - Follow On Test and Evaluation (FOT&E)	3	2019	3	2019
Inc F - FY16 FRP Production Milestone	4	2016	4	2016
Inc F - FY17 FRP Production Milestone	2	2017	2	2017
Inc F - FY18 FRP Production Milestone	2	2018	2	2018
Inc F - FY19 FRP Production Milestone	2	2019	2	2019
Inc F - FY20 FRP Production Milestone	2	2020	2	2020
Inc F - FY21 FRP Production Milestone	2	2021	2	2021
Inc F - Software Development (FRP Build 11/12)	1	2016	2	2017
Inc F - Software Development (FRP Build 13)	2	2017	2	2018
Inc F - Software Development (FRP Build 14)	2	2018	2	2019
Inc F - Software Development (FRP Build 15)	2	2019	2	2020
Inc F - Software Development (FRP Build 16)	2	2020	2	2021
Inc F - Software Development (FRP Build 17)	2	2021	2	2022
Inc F - FY16 SOI Development	1	2016	4	2016
Inc F - FY17 SOI Development	1	2017	4	2017
Inc F - FY18 SOI Development	1	2018	4	2018
Inc F - FY19 SOI Development	1	2019	4	2019
Inc F - FY20 SOI Development	1	2020	4	2020

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Inc F - FY21 SOI Development	1	2021	4	2021
Inc F - FY22 SOI Development	1	2022	4	2022
Inc F - A2AD Capability Development	1	2017	4	2021
Inc F - Joint Interface Development	1	2018	2	2019
Inc F - Next-Gen Chassis Development	1	2017	2	2018
Inc F - FRP Installation FY16	1	2016	1	2017
Inc F - FRP Installation FY17	2	2017	1	2018
Inc F - FRP Installation FY18	2	2018	1	2019
Inc F - FRP Installation FY19	2	2019	1	2020
Inc F - FRP Installation FY20	2	2020	1	2021
Inc F - FRP Installation FY21	2	2021	1	2022
Inc F - FRP Installation FY22	2	2022	4	2022
Spectral (Increment G)				
Spectral - Milestone B	3	2018	3	2018
Spectral - Pre - Acquisition ADM	1	2016	1	2016
Spectral - Capability Development Document	1	2016	4	2017
Spectral - Build Decision 1	1	2019	1	2019
Spectral - Build Decision 2	2	2021	2	2021
Spectral - Limitted Deployment Decision (LDD)	2	2021	2	2021
Spectral - Technical Requirements & Traceability Matrices	1	2017	4	2018
Spectral - Development Requirements Package Approval 1	1	2019	1	2019
Spectral - Development Requirements Package Approval 2	2	2021	2	2021
Spectral - Development Requirements Package Approval 3	3	2022	3	2022
Spectral - Build Technical Review 1	2	2019	2	2019
Spectral - Build Technical Review 2	3	2021	3	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Spectral - EDM - 1	2	2020	2	2020
Spectral - EDM - 2	4	2020	4	2020
Spectral - Fleet Capability Release 1	2	2019	4	2020
Spectral - Fleet Capability Release 2	3	2021	4	2022
Spectral - Fielding Technical Review 1	4	2020	4	2020
Spectral - Fielding Technical Review 2	4	2022	4	2022
Spectral - Systems Engineering Plan	1	2016	3	2017
Spectral - FCR-1 (IT)	2	2020	2	2020
Spectral - FCR-2 (IT)	4	2022	4	2022
Spectral - Operational Assessment (OA)	3	2020	4	2020
Spectral - Test Evaluation Master Plan	3	2016	2	2018
Spectral - FCR-1 Production Milestone (FY21)	2	2021	2	2021
Spectral - FCR-1 Production Milestone (FY22)	2	2022	2	2022
SSEE Modifications				
SSEE Modifications - ILA	4	2016	1	2017
SSEE Modifications - Fielding Decision (FRP)	1	2018	1	2018
SSEE Modifications - Initial Operating Capability (IOC)	3	2018	3	2018
SSEE Modifications - LRIP Installation FY16	2	2016	4	2016
SSEE Modifications - LRIP Installation FY17	2	2017	4	2017
SSEE Modifications - LRIP Installation FY18	2	2018	4	2018
SSEE Modifications - FRP Installation FY19	2	2019	4	2019
SSEE Modifications - FRP Installation FY20	2	2020	4	2020
SSEE Modifications - FRP Installation FY21	2	2021	4	2021
SSEE Modifications - FRP Installation FY22	2	2022	4	2022
SSEE Modifications - Software Development (LRIP Phase 3)	1	2016	3	2016

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SSEE Modifications - Software Development (FRP Build 11)	3	2016	2	2017
SSEE Modifications - Software Development (FRP Build 12)	2	2017	2	2018
SSEE Modifications - Software Development (FRP Build 13)	2	2018	2	2019
SSEE Modifications - Software Development (FRP Build 14)	2	2019	2	2020
SSEE Modifications - Software Development (FRP Build 15)	2	2020	2	2021
SSEE Modifications - Software Development (FRP Build 16)	2	2021	2	2022
SSEE Modifications - Software Development (FRP Build 17)	2	2022	4	2022
SSEE Modifications - Next Generation GRAYWING Development	1	2017	4	2020
SSEE Modifications - Development Testing (IT-E1/E2)	4	2017	4	2017
SSEE Modifications - A2AD Capability Development	1	2017	4	2021
SSEE Modifications - Joint Integration Test Command (JITC) Certification FY16	4	2016	4	2016
SSEE Modifications - Operational Testing (OT-E1)	4	2017	4	2017
SSEE Modifications - Joint Integration Test Command (JITC) Certification FY19	3	2019	3	2019
SSEE Modifications - FY16 LRIP Production Milestone	4	2016	4	2016
SSEE Modifications - FY17 LRIP Production Milestone	4	2017	4	2017
SSEE Modifications - FY18 FRP Production Milestone	2	2018	2	2018
SSEE Modifications - FY19 FRP Production Milestone	2	2019	2	2019
SSEE Modifications - FY20 FRP Production Milestone	2	2020	2	2020
SSEE Modifications - FY21 FRP Production Milestone	2	2021	2	2021
SSEE Modifications - FY22 FRP Production Milestone	2	2022	2	2022
ICADS Inc II				
ICADS Inc II - Pre-Acquisition ADM	3	2017	3	2017
ICADS Inc II - Milestone C (LRIP)	2	2019	2	2019
ICADS Inc II - Integration Test - B1	3	2018	3	2018
ICADS Inc II - Integration Test - B2	4	2018	4	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0304785N / *Tactical Cryptologic Systems*	**Project (Number/Name)** 2134. / *Shipboard IW Exploit*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ICADS Inc II - Systems Engineering Plan (SEP)	3	2017	1	2018
ICADS Inc II - Test Evaluation Master Plan (TEMP)	3	2017	1	2019
ICADS Inc II - Project Description Document (PDD)	1	2016	3	2016
ICADS Inc II - Capability Production Document (CPD)	1	2016	2	2016
ICADS Inc II - System Requirements Review (SRR)	1	2018	1	2018
ICADS Inc II - Preliminary Design Review (PDR)	2	2018	2	2018
ICADS Inc II - Critical Design Review (CDR)	3	2018	3	2018
ICADS Inc II - Engineering Design Model (EDM) #1	4	2018	4	2018
ICADS Inc II - Engineering Design Model (EDM) #2	1	2019	1	2019
ICADS Inc II - Lead System Integration (LSI)	3	2017	3	2019
ICADS Inc II - Request for Proposal (RFP)	3	2017	3	2018
ICADS Inc II - RFP Release	3	2018	3	2018
ICADS Inc II - Low Rate Initial Production (LRIP)	3	2019	3	2019
ICADS Inc II - FY20 FRP Production Milestone	2	2020	2	2020
ICADS Inc II - FY21 FRP Production Milestone	2	2021	2	2021
ICADS Inc II - FY22 FRP Production Milestone	2	2022	2	2022

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0305124N *I (U)Special Applications Program*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	33.769	26.505	35.002	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	95.276
3103: *Intelligence Engineering*	33.769	26.505	15.802	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	76.076
3419: *Technical Algorithm Development*	0.000	0.000	19.200	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.200

A. Mission Description and Budget Item Justification

Additional details with respect to this line item are held at a higher classification. This line item is reported to Congress via separate channels.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	35.905	35.002	26.510	-	26.510
Current President's Budget	26.505	35.002	0.000	-	0.000
Total Adjustments	-9.400	0.000	-26.510	-	-26.510
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-9.400	0.000			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	0.000	0.000	-26.510	-	-26.510

Change Summary Explanation

Technical: Details held at higher classification.
Schedule: Details held at higher classification.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0305124N / *(U)Special Applications Program*	Project (Number/Name) 3103 / *Intelligence Engineering*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3103: *Intelligence Engineering*	33.769	26.505	15.802	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	76.076
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Additional details with respect to this line item are held at a higher classification. This line item is reported to Congress via separate channels.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0305124N / *(U)Special Applications Program*	Project (Number/Name) 3419 / *Technical Algorithm Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3419: *Technical Algorithm Development*	0.000	0.000	19.200	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.200
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Additional details with respect to this line item are held at a higher classification. This line item is reported to Congress via separate channels.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0306250M *I (U)Cyber Operations Technology Development*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	4.942	4.502	-	4.502	6.886	6.983	7.087	7.291	Continuing	Continuing
2958: *Cyber Operations*	0.000	0.000	4.942	4.502	-	4.502	6.886	6.983	7.087	7.291	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element supports cost associated with research, development, and modification of cyber technologies supporting Marine Corps Cyber Mission Forces (CMF) and missions assigned by USCYBERCOM.

The Strategic Cyber Security Operations Development is an initiative to conduct engineering and manufacturing development tasks aimed at the attainment and maintenance of the security properties of the Marine Corps and its assets against relevant security risks within the cyber environment. This project includes cyber security tools system development, integration, enhancement and demonstrations designed at protecting and defending the Marine Corps Enterprise Network (MCEN); defending national interests against cyberattacks of significant consequence; and providing integrated cyber capabilities to support military operations and contingency plans. The project incorporates development of strategic partnerships with defense intelligence agencies and commercial cyber security developers in order to leverage current and emerging cyber security technologies in defensive/offensive tools, policies, security concepts, security safeguards, guidelines, risk management approaches, actions, training, and best practices that can be used to protect the Marine Corps' cyber domain; organization and user's assets. Marine Corps' organization and user's assets include connected computing devices, infrastructure, applications, services, telecommunications systems, and the totality of transmitted and/or stored information in the cyber environment.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	4.942	4.948	-	4.948
Current President's Budget	0.000	4.942	4.502	-	4.502
Total Adjustments	0.000	0.000	-0.446	-	-0.446
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	-0.480	-	-0.480
• Rate/Misc Adjustments	0.000	0.000	0.034	-	0.034

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0306250M / *(U)Cyber Operations Technology Development*	Project (Number/Name) 2958 / *Cyber Operations*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2958: *Cyber Operations*	0.000	0.000	4.942	4.502	-	4.502	6.886	6.983	7.087	7.291	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program element supports cost associated with research, development, and modification of cyber technologies supporting Marine Corps Cyber Mission Forces (CMF) and missions assigned by USCYBERCOM.

The Strategic Cyber Security Operations Development is an initiative to conduct engineering and manufacturing development tasks aimed at the attainment and maintenance of the security properties of the Marine Corps and its assets against relevant security risks within the cyber environment. This project includes cyber security tools system development, integration, enhancement and demonstrations designed at protecting and defending the Marine Corps Enterprise Network (MCEN); defending national interests against cyber attacks of significant consequence; and providing integrated cyber capabilities to support military operations and contingency plans. The project incorporates development of strategic partnerships with defense intelligence agencies and commercial cyber security developers in order to leverage current and emerging cyber security technologies in defensive/offensive tools, policies, security concepts, security safeguards, guidelines, risk management approaches, actions, training, and best practices that can be used to protect the Marine Corps' cyber domain; organization and user's assets. Marine Corps' organization and user's assets include connected computing devices, infrastructure, applications, services, telecommunications systems, and the totality of transmitted and/or stored information in the cyber environment.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Cyber Tool Development	0.000	4.942	4.502	0.000	4.502
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Initiate the cyber tool development process for MARFORCYBERCOM. The task requires complex and experienced skill sets in order to write code and perform: technology research, software and engineering development, integration of systems concepts, prevention of adversary presence, product development.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0306250M / *(U)Cyber Operations Technology Development*	**Project (Number/Name)** 2958 / *Cyber Operations*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue the cyber tool development process for MARFORCYBERCOM. The task requires complex and experienced skill sets in order to write code and perform: technology research, software and engineering development, integration of systems concepts, prevention of adversary presence, product development. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	4.942	4.502	0.000	4.502

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The funding will be used for contracted tool developers at NSA, Fort Meade for the preponderance of the work. However, other vendors or government activities that are yet to be determined will be used in further infrastructure development for the cyber environment.

E. Performance Metrics

TBD

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