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**Department of Defense
Fiscal Year (FY) 2019 Budget Estimates**

February 2018



Army

Justification Book of

Research, Development, Test & Evaluation, Army

RDT&E – Volume III, Budget Activity 6

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Army • Budget Estimates FY 2019 • RDT&E Program

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RESEARCH, DEVELOPMENT, TEST AND EVALUATION, ARMY

APPROPRIATION LANGUAGE

For expenses necessary for basic and applied scientific research, development, test and evaluation, including maintenance, rehabilitation, lease, and operation of facilities and equipment, \$10,484,483,000.00 to remain available for obligation until September 30, 2020.

The following Justification Books were prepared at a cost of \$226,413: Aircraft (ACFT), Missile (MSLS), Weapons & Tracked Combat Vehicles (WTCV), Ammunition (AMMO), Other Procurement Army (OPA) 1 - Tactical & Support Vehicles, Other Procurement Army (OPA) 2 – Communications & Electronics, Other Procurement Army (OPA) 3 & 4 - Other Support Equipment & Spares, Research, Development, Test and Evaluation (RDTE) for: Budget Activity 1, Budget Activity 2, Budget Activity 3, Budget Activity 4, Budget Activity 5A, Budget Activity 5B, Budget Activity 6, and Budget Activity 7.

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Department of Defense
 FY 2019 President's Budget
 Exhibit R-1 FY 2019 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

18 Jan 2018

Appropriation	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO
Research, Development, Test & Eval, Army	8,852,507	8,273,447	8,273,447	342,356	342,356
Total Research, Development, Test & Evaluation	8,852,507	8,273,447	8,273,447	342,356	342,356

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Exhibit R-1 FY 2019 President's Budget
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(Dollars in Thousands)

18 Jan 2018

	FY 2018 Emergency Requests**	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency
Appropriation						

Research, Development, Test & Eval, Army	20,700	-20,700		8,636,503	-20,700	8,615,803
Total Research, Development, Test & Evaluation	20,700	-20,700		8,636,503	-20,700	8,615,803

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Total Obligational Authority
(Dollars in Thousands)

18 Jan 2018

Appropriation -----	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Research, Development, Test & Eval, Army	10,159,379	325,104	10,484,483
Total Research, Development, Test & Evaluation	10,159,379	325,104	10,484,483

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Department of Defense
FY 2019 President's Budget
Exhibit R-1 FY 2019 President's Budget
Total Obligational Authority
(Dollars in Thousands)

18 Jan 2018

Summary Recap of Budget Activities	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests* with CR Adj OCO
Basic Research	473,216	430,022	430,022		
Applied Research	1,196,132	889,182	889,182		
Advanced Technology Development	1,351,035	1,070,977	1,070,977		
Advanced Component Development & Prototypes	619,976	890,889	890,889	18,000	18,000
System Development & Demonstration	2,502,560	3,012,840	3,012,840	57,840	57,840
RDT&E Management Support	1,413,481	1,253,845	1,253,845		
Operational Systems Development	1,296,107	1,877,685	1,877,685	43,528	43,528
Undistributed		-1,151,993	-1,151,993	222,988	222,988
Total Research, Development, Test & Evaluation	8,852,507	8,273,447	8,273,447	342,356	342,356
Summary Recap of FYDP Programs					
General Purpose Forces	611,072	710,401	710,401	15,000	15,000
Intelligence and Communications	342,648	370,519	370,519	29,728	29,728
Research and Development	7,826,372	8,215,942	8,215,942	74,640	74,640
Central Supply and Maintenance	59,891	60,877	60,877		
Administration and Associated Activities	7,899	-1,151,993	-1,151,993	222,988	222,988
Space		60,547	60,547		
Classified Programs	4,625	7,154	7,154		
Total Research, Development, Test & Evaluation	8,852,507	8,273,447	8,273,447	342,356	342,356

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Department of Defense
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Total Obligational Authority
(Dollars in Thousands)

18 Jan 2018

	FY 2018 Emergency Requests**	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency
<u>Summary Recap of Budget Activities</u>						
Basic Research				430,022		430,022
Applied Research				889,182		889,182
Advanced Technology Development	12,000	-12,000		1,082,977	-12,000	1,070,977
Advanced Component Development & Prototypes	8,700	-8,700		917,589	-8,700	908,889
System Development & Demonstration				3,070,680		3,070,680
RDT&E Management Support				1,253,845		1,253,845
Operational Systems Development				1,921,213		1,921,213
Undistributed				-929,005		-929,005
Total Research, Development, Test & Evaluation	20,700	-20,700		8,636,503	-20,700	8,615,803
<u>Summary Recap of FYDP Programs</u>						
General Purpose Forces				725,401		725,401
Intelligence and Communications				400,247		400,247
Research and Development	20,700	-20,700		8,311,282	-20,700	8,290,582
Central Supply and Maintenance				60,877		60,877
Administration and Associated Activities				-929,005		-929,005
Space				60,547		60,547
Classified Programs				7,154		7,154
Total Research, Development, Test & Evaluation	20,700	-20,700		8,636,503	-20,700	8,615,803

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Summary Recap of Budget Activities	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Basic Research	445,895		445,895
Applied Research	919,609		919,609
Advanced Technology Development	1,026,698		1,026,698
Advanced Component Development & Prototypes	1,329,393	28,500	1,357,893
System Development & Demonstration	3,192,689	236,863	3,429,552
RDT&E Management Support	1,322,481		1,322,481
Operational Systems Development	1,922,614	59,741	1,982,355
Undistributed			
Total Research, Development, Test & Evaluation	10,159,379	325,104	10,484,483
Summary Recap of FYDP Programs			
General Purpose Forces	783,464	10,000	793,464
Intelligence and Communications	313,112	40,613	353,725
Research and Development	8,775,582	274,491	9,050,073
Central Supply and Maintenance	53,958		53,958
Administration and Associated Activities			
Space	227,308		227,308
Classified Programs	5,955		5,955
Total Research, Development, Test & Evaluation	10,159,379	325,104	10,484,483

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Total Obligational Authority
(Dollars in Thousands)

18 Jan 2018

	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO
<u>Summary Recap of Budget Activities</u>					
Basic Research	473,216	430,022	430,022		
Applied Research	1,196,132	889,182	889,182		
Advanced Technology Development	1,351,035	1,070,977	1,070,977		
Advanced Component Development & Prototypes	619,976	890,889	890,889	18,000	18,000
System Development & Demonstration	2,502,560	3,012,840	3,012,840	57,840	57,840
RDT&E Management Support	1,413,481	1,253,845	1,253,845		
Operational Systems Development	1,296,107	1,877,685	1,877,685	43,528	43,528
Undistributed		-1,151,993	-1,151,993	222,988	222,988
Total Research, Development, Test & Evaluation	8,852,507	8,273,447	8,273,447	342,356	342,356
<u>Summary Recap of FYDP Programs</u>					
General Purpose Forces	611,072	710,401	710,401	15,000	15,000
Intelligence and Communications	342,648	370,519	370,519	29,728	29,728
Research and Development	7,826,372	8,215,942	8,215,942	74,640	74,640
Central Supply and Maintenance	59,891	60,877	60,877		
Administration and Associated Activities	7,899	-1,151,993	-1,151,993	222,988	222,988
Space		60,547	60,547		
Classified Programs	4,625	7,154	7,154		
Total Research, Development, Test & Evaluation	8,852,507	8,273,447	8,273,447	342,356	342,356

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	FY 2018 Emergency Requests** Emergency	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency
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Applied Research				889,182		889,182
Advanced Technology Development	12,000	-12,000		1,082,977	-12,000	1,070,977
Advanced Component Development & Prototypes	8,700	-8,700		917,589	-8,700	908,889
System Development & Demonstration				3,070,680		3,070,680
RDT&E Management Support				1,253,845		1,253,845
Operational Systems Development				1,921,213		1,921,213
Undistributed				-929,005		-929,005
Total Research, Development, Test & Evaluation	20,700	-20,700		8,636,503	-20,700	8,615,803
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Intelligence and Communications				400,247		400,247
Research and Development	20,700	-20,700		8,311,282	-20,700	8,290,582
Central Supply and Maintenance				60,877		60,877
Administration and Associated Activities				-929,005		-929,005
Space				60,547		60,547
Classified Programs				7,154		7,154
Total Research, Development, Test & Evaluation	20,700	-20,700		8,636,503	-20,700	8,615,803

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Summary Recap of Budget Activities	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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Research and Development	8,775,582	274,491	9,050,073
Central Supply and Maintenance	53,958		53,958
Administration and Associated Activities			
Space	227,308		227,308
Classified Programs	5,955		5,955
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Department of the Army
FY 2019 President's Budget
Exhibit R-1 FY 2019 President's Budget
Total Obligational Authority
(Dollars in Thousands)

18 Jan 2018

Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S
1	0601101A	In-House Laboratory Independent Research	01	11,936	12,010	12,010			U
2	0601102A	Defense Research Sciences	01	286,086	263,590	263,590			U
3	0601103A	University Research Initiatives	01	66,506	67,027	67,027			U
4	0601104A	University and Industry Research Centers	01	108,688	87,395	87,395			U
		Basic Research		473,216	430,022	430,022			
5	0602105A	Materials Technology	02	81,950	29,640	29,640			U
6	0602120A	Sensors and Electronic Survivability	02	50,574	35,730	35,730			U
7	0602122A	TRACTOR HIP	02	6,995	8,627	8,627			U
8	0602126A	TRACTOR JACK	02						U
9	0602211A	Aviation Technology	02	67,593	66,086	66,086			U
10	0602270A	Electronic Warfare Technology	02	34,528	27,144	27,144			U
11	0602303A	Missile Technology	02	66,173	43,742	43,742			U
12	0602307A	Advanced Weapons Technology	02	52,766	22,785	22,785			U
13	0602308A	Advanced Concepts and Simulation	02	29,767	28,650	28,650			U
14	0602601A	Combat Vehicle and Automotive Technology	02	89,852	67,232	67,232			U
15	0602618A	Ballistics Technology	02	103,484	85,309	85,309			U
16	0602622A	Chemical, Smoke and Equipment Defeating Technology	02	3,772	4,004	4,004			U
17	0602623A	Joint Service Small Arms Program	02	5,331	5,615	5,615			U

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Department of the Army
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(Dollars in Thousands)

18 Jan 2018

Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2018 Emergency Requests** Emergency	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency	S e c
1	0601101A	In-House Laboratory Independent Research	01				12,010		12,010	U
2	0601102A	Defense Research Sciences	01				263,590		263,590	U
3	0601103A	University Research Initiatives	01				67,027		67,027	U
4	0601104A	University and Industry Research Centers	01				87,395		87,395	U
		Basic Research					430,022		430,022	
5	0602105A	Materials Technology	02				29,640		29,640	U
6	0602120A	Sensors and Electronic Survivability	02				35,730		35,730	U
7	0602122A	TRACTOR HIP	02				8,627		8,627	U
8	0602126A	TRACTOR JACK	02							U
9	0602211A	Aviation Technology	02				66,086		66,086	U
10	0602270A	Electronic Warfare Technology	02				27,144		27,144	U
11	0602303A	Missile Technology	02				43,742		43,742	U
12	0602307A	Advanced Weapons Technology	02				22,785		22,785	U
13	0602308A	Advanced Concepts and Simulation	02				28,650		28,650	U
14	0602601A	Combat Vehicle and Automotive Technology	02				67,232		67,232	U
15	0602618A	Ballistics Technology	02				85,309		85,309	U
16	0602622A	Chemical, Smoke and Equipment Defeating Technology	02				4,004		4,004	U
17	0602623A	Joint Service Small Arms Program	02				5,615		5,615	U

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18 Jan 2018

Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se
1	0601101A	In-House Laboratory Independent Research	01	11,585		11,585	U
2	0601102A	Defense Research Sciences	01	276,912		276,912	U
3	0601103A	University Research Initiatives	01	65,283		65,283	U
4	0601104A	University and Industry Research Centers	01	92,115		92,115	U
		Basic Research		445,895		445,895	
5	0602105A	Materials Technology	02	28,600		28,600	U
6	0602120A	Sensors and Electronic Survivability	02	32,366		32,366	U
7	0602122A	TRACTOR HIP	02	8,674		8,674	U
8	0602126A	TRACTOR JACK	02	400		400	U
9	0602211A	Aviation Technology	02	64,847		64,847	U
10	0602270A	Electronic Warfare Technology	02	25,571		25,571	U
11	0602303A	Missile Technology	02	50,183		50,183	U
12	0602307A	Advanced Weapons Technology	02	29,502		29,502	U
13	0602308A	Advanced Concepts and Simulation	02	28,500		28,500	U
14	0602601A	Combat Vehicle and Automotive Technology	02	70,450		70,450	U
15	0602618A	Ballistics Technology	02	75,541		75,541	U
16	0602622A	Chemical, Smoke and Equipment Defeating Technology	02	5,032		5,032	U
17	0602623A	Joint Service Small Arms Program	02	12,394		12,394	U

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Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S e c
18	0602624A	Weapons and Munitions Technology	02	118,068	41,455	41,455			U
19	0602705A	Electronics and Electronic Devices	02	72,979	58,352	58,352			U
20	0602709A	Night Vision Technology	02	34,762	34,723	34,723			U
21	0602712A	Countermines Systems	02	29,495	26,190	26,190			U
22	0602716A	Human Factors Engineering Technology	02	23,359	24,127	24,127			U
23	0602720A	Environmental Quality Technology	02	21,553	21,678	21,678			U
24	0602782A	Command, Control, Communications Technology	02	36,396	33,123	33,123			U
25	0602783A	Computer and Software Technology	02	13,452	14,041	14,041			U
26	0602784A	Military Engineering Technology	02	92,140	67,720	67,720			U
27	0602785A	Manpower/Personnel/Training Technology	02	23,475	20,216	20,216			U
28	0602786A	Warfighter Technology	02	59,327	39,559	39,559			U
29	0602787A	Medical Technology	02	78,341	83,434	83,434			U
		Applied Research		1,196,132	889,182	889,182			
30	0603001A	Warfighter Advanced Technology	03	50,004	44,863	44,863			U
31	0603002A	Medical Advanced Technology	03	106,040	67,780	67,780			U
32	0603003A	Aviation Advanced Technology	03	111,654	160,746	160,746			U
33	0603004A	Weapons and Munitions Advanced Technology	03	198,245	84,079	84,079			U
34	0603005A	Combat Vehicle and Automotive Advanced Technology	03	163,501	125,537	125,537			U

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Appropriation: 2040A Research, Development, Test & Eval, Army

Line	Program Element No Number	Item	Act	FY 2018 Emergency Requests**	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency	S e c
18	0602624A	Weapons and Munitions Technology	02				41,455		41,455	U
19	0602705A	Electronics and Electronic Devices	02				58,352		58,352	U
20	0602709A	Night Vision Technology	02				34,723		34,723	U
21	0602712A	Countermines Systems	02				26,190		26,190	U
22	0602716A	Human Factors Engineering Technology	02				24,127		24,127	U
23	0602720A	Environmental Quality Technology	02				21,678		21,678	U
24	0602782A	Command, Control, Communications Technology	02				33,123		33,123	U
25	0602783A	Computer and Software Technology	02				14,041		14,041	U
26	0602784A	Military Engineering Technology	02				67,720		67,720	U
27	0602785A	Manpower/Personnel/Training Technology	02				20,216		20,216	U
28	0602786A	Warfighter Technology	02				39,559		39,559	U
29	0602787A	Medical Technology	02				83,434		83,434	U
	Applied Research						889,182		889,182	
30	0603001A	Warfighter Advanced Technology	03				44,863		44,863	U
31	0603002A	Medical Advanced Technology	03				67,780		67,780	U
32	0603003A	Aviation Advanced Technology	03				160,746		160,746	U
33	0603004A	Weapons and Munitions Advanced Technology	03				84,079		84,079	U
34	0603005A	Combat Vehicle and Automotive Advanced Technology	03				125,537		125,537	U

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Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
18	0602624A	Weapons and Munitions Technology	02	40,444		40,444	U
19	0602705A	Electronics and Electronic Devices	02	58,283		58,283	U
20	0602709A	Night Vision Technology	02	29,582		29,582	U
21	0602712A	Countermines Systems	02	21,244		21,244	U
22	0602716A	Human Factors Engineering Technology	02	24,131		24,131	U
23	0602720A	Environmental Quality Technology	02	13,242		13,242	U
24	0602782A	Command, Control, Communications Technology	02	55,003		55,003	U
25	0602783A	Computer and Software Technology	02	14,958		14,958	U
26	0602784A	Military Engineering Technology	02	78,159		78,159	U
27	0602785A	Manpower/Personnel/Training Technology	02	21,862		21,862	U
28	0602786A	Warfighter Technology	02	40,566		40,566	U
29	0602787A	Medical Technology	02	90,075		90,075	U
	Applied Research			919,609		919,609	
30	0603001A	Warfighter Advanced Technology	03	39,338		39,338	U
31	0603002A	Medical Advanced Technology	03	62,496		62,496	U
32	0603003A	Aviation Advanced Technology	03	124,958		124,958	U
33	0603004A	Weapons and Munitions Advanced Technology	03	102,686		102,686	U
34	0603005A	Combat Vehicle and Automotive Advanced Technology	03	119,739		119,739	U

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Line	Program Element No Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S e c
35	0603006A	Space Application Advanced Technology	03	3,787	12,231	12,231			U
36	0603007A	Manpower, Personnel and Training Advanced Technology	03	12,110	6,466	6,466			U
37	0603009A	TRACTOR HIKE	03	21,374	28,552	28,552			U
38	0603015A	Next Generation Training & Simulation Systems	03	18,238	16,434	16,434			U
39	0603020A	TRACTOR ROSE	03	11,910					U
40	0603125A	Combating Terrorism - Technology Development	03	33,553	26,903	26,903			U
41	0603130A	TRACTOR NAIL	03	2,340	4,880	4,880			U
42	0603131A	TRACTOR EGGS	03	2,470	4,326	4,326			U
43	0603270A	Electronic Warfare Technology	03	40,819	31,296	31,296			U
44	0603313A	Missile and Rocket Advanced Technology	03	113,683	62,850	62,850			U
45	0603322A	TRACTOR CAGE	03	11,107	12,323	12,323			U
46	0603461A	High Performance Computing Modernization Program	03	215,462	182,331	182,331			U
47	0603606A	Landmine Warfare and Barrier Advanced Technology	03	16,798	17,948	17,948			U
48	0603607A	Joint Service Small Arms Program	03	5,615	5,796	5,796			U
49	0603710A	Night Vision Advanced Technology	03	42,798	47,135	47,135			U
50	0603728A	Environmental Quality Technology Demonstrations	03	21,415	10,421	10,421			U

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35	0603006A	Space Application Advanced Technology	03				12,231		12,231	U
36	0603007A	Manpower, Personnel and Training Advanced Technology	03				6,466		6,466	U
37	0603009A	TRACTOR HIKE	03	12,000	-12,000		40,552	-12,000	28,552	U
38	0603015A	Next Generation Training & Simulation Systems	03				16,434		16,434	U
39	0603020A	TRACTOR ROSE	03							U
40	0603125A	Combating Terrorism - Technology Development	03				26,903		26,903	U
41	0603130A	TRACTOR NAIL	03				4,880		4,880	U
42	0603131A	TRACTOR EGGS	03				4,326		4,326	U
43	0603270A	Electronic Warfare Technology	03				31,296		31,296	U
44	0603313A	Missile and Rocket Advanced Technology	03				62,850		62,850	U
45	0603322A	TRACTOR CAGE	03				12,323		12,323	U
46	0603461A	High Performance Computing Modernization Program	03				182,331		182,331	U
47	0603606A	Landmine Warfare and Barrier Advanced Technology	03				17,948		17,948	U
48	0603607A	Joint Service Small Arms Program	03				5,796		5,796	U
49	0603710A	Night Vision Advanced Technology	03				47,135		47,135	U
50	0603728A	Environmental Quality Technology Demonstrations	03				10,421		10,421	U

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c -
35	0603006A	Space Application Advanced Technology	03	13,000		13,000	U
36	0603007A	Manpower, Personnel and Training Advanced Technology	03	8,044		8,044	U
37	0603009A	TRACTOR HIKE	03	22,631		22,631	U
38	0603015A	Next Generation Training & Simulation Systems	03	25,682		25,682	U
39	0603020A	TRACTOR ROSE	03				U
40	0603125A	Combating Terrorism - Technology Development	03	3,762		3,762	U
41	0603130A	TRACTOR NAIL	03	4,896		4,896	U
42	0603131A	TRACTOR EGGS	03	6,041		6,041	U
43	0603270A	Electronic Warfare Technology	03	31,491		31,491	U
44	0603313A	Missile and Rocket Advanced Technology	03	61,132		61,132	U
45	0603322A	TRACTOR CAGE	03	16,845		16,845	U
46	0603461A	High Performance Computing Modernization Program	03	183,322		183,322	U
47	0603606A	Landmine Warfare and Barrier Advanced Technology	03	11,104		11,104	U
48	0603607A	Joint Service Small Arms Program	03	5,885		5,885	U
49	0603710A	Night Vision Advanced Technology	03	61,376		61,376	U
50	0603728A	Environmental Quality Technology Demonstrations	03	9,136		9,136	U

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51	0603734A	Military Engineering Advanced Technology	03	59,101	32,448	32,448			U
52	0603772A	Advanced Tactical Computer Science and Sensor Technology	03	52,572	52,206	52,206			U
53	0603794A	C3 Advanced Technology	03	36,439	33,426	33,426			U
		Advanced Technology Development		1,351,035	1,070,977	1,070,977			
54	0603305A	Army Missile Defense Systems Integration	04	39,395	9,634	9,634			U
55	0603308A	Army Space Systems Integration	04	32,278					U
56	0603327A	Air and Missile Defense Systems Engineering	04	6,100	33,949	33,949	15,000	15,000	U
57	0603619A	Landmine Warfare and Barrier - Adv Dev	04	65,062	72,909	72,909			U
58	0603627A	Smoke, Obscurant and Target Defeating Sys-Adv Dev	04	43,177	7,135	7,135			U
59	0603639A	Tank and Medium Caliber Ammunition	04	47,745	41,452	41,452			U
60	0603645A	Armored System Modernization - Adv Dev	04		32,739	32,739			U
61	0603747A	Soldier Support and Survivability	04	13,607	10,157	10,157	3,000	3,000	U
62	0603766A	Tactical Electronic Surveillance System - Adv Dev	04	15,730	27,733	27,733			U
63	0603774A	Night Vision Systems Advanced Development	04	9,930	12,347	12,347			U
64	0603779A	Environmental Quality Technology - Dem/Val	04	7,480	10,456	10,456			U

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51	0603734A	Military Engineering Advanced Technology	03				32,448		32,448	U
52	0603772A	Advanced Tactical Computer Science and Sensor Technology	03				52,206		52,206	U
53	0603794A	C3 Advanced Technology	03				33,426		33,426	U
		Advanced Technology Development		12,000	-12,000		1,082,977	-12,000	1,070,977	
54	0603305A	Army Missile Defense Systems Integration	04				9,634		9,634	U
55	0603308A	Army Space Systems Integration	04							U
56	0603327A	Air and Missile Defense Systems Engineering	04	8,700	-8,700		57,649	-8,700	48,949	U
57	0603619A	Landmine Warfare and Barrier - Adv Dev	04				72,909		72,909	U
58	0603627A	Smoke, Obscurant and Target Defeating Sys-Adv Dev	04				7,135		7,135	U
59	0603639A	Tank and Medium Caliber Ammunition	04				41,452		41,452	U
60	0603645A	Armored System Modernization - Adv Dev	04				32,739		32,739	U
61	0603747A	Soldier Support and Survivability	04				13,157		13,157	U
62	0603766A	Tactical Electronic Surveillance System - Adv Dev	04				27,733		27,733	U
63	0603774A	Night Vision Systems Advanced Development	04				12,347		12,347	U
64	0603779A	Environmental Quality Technology - Dem/Val	04				10,456		10,456	U

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51	0603734A	Military Engineering Advanced Technology	03	25,864		25,864	U
52	0603772A	Advanced Tactical Computer Science and Sensor Technology	03	34,883		34,883	U
53	0603794A	C3 Advanced Technology	03	52,387		52,387	U
		Advanced Technology Development		1,026,698		1,026,698	
54	0603305A	Army Missile Defense Systems Integration	04	10,777		10,777	U
55	0603308A	Army Space Systems Integration	04				U
56	0603327A	Air and Missile Defense Systems Engineering	04	42,802	1,000	43,802	U
57	0603619A	Landmine Warfare and Barrier - Adv Dev	04	45,254		45,254	U
58	0603627A	Smoke, Obscurant and Target Defeating Sys-Adv Dev	04	22,700	1,500	24,200	U
59	0603639A	Tank and Medium Caliber Ammunition	04	41,974		41,974	U
60	0603645A	Armored System Modernization - Adv Dev	04	119,395		119,395	U
61	0603747A	Soldier Support and Survivability	04	8,746	3,000	11,746	U
62	0603766A	Tactical Electronic Surveillance System - Adv Dev	04	35,667		35,667	U
63	0603774A	Night Vision Systems Advanced Development	04	7,350		7,350	U
64	0603779A	Environmental Quality Technology - Dem/Val	04	14,749		14,749	U

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65	0603790A	NATO Research and Development	04	2,211	2,588	2,588			U
66	0603801A	Aviation - Adv Dev	04	7,702	14,055	14,055			U
67	0603804A	Logistics and Engineer Equipment - Adv Dev	04	17,445	35,333	35,333			U
68	0603807A	Medical Systems - Adv Dev	04	47,336	33,491	33,491			U
69	0603827A	Soldier Systems - Advanced Development	04	54,497	20,239	20,239			U
70	0604017A	Robotics Development	04		39,608	39,608			U
71	0604020A	Cross Functional Team (CFT) Advanced Development & Prototyping	04						U
72	0604100A	Analysis Of Alternatives	04	6,354	9,921	9,921			U
73	0604113A	Future Tactical Unmanned Aircraft System (FTUAS)	04						U
74	0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04	33,780	76,728	76,728			U
75	0604115A	Technology Maturation Initiatives	04	57,737	115,221	115,221			U
76	0604117A	Maneuver - Short Range Air Defense (M-SHORAD)	04		20,000	20,000			U
77	0604118A	TRACTOR BEAM	04		10,400	10,400			U
78	0604120A	Assured Positioning, Navigation and Timing (PNT)	04	83,074	164,967	164,967			U
79	0604121A	Synthetic Training Environment Refinement & Prototyping	04		1,600	1,600			U

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65	0603790A	NATO Research and Development	04				2,588		2,588	U
66	0603801A	Aviation - Adv Dev	04				14,055		14,055	U
67	0603804A	Logistics and Engineer Equipment - Adv Dev	04				35,333		35,333	U
68	0603807A	Medical Systems - Adv Dev	04				33,491		33,491	U
69	0603827A	Soldier Systems - Advanced Development	04				20,239		20,239	U
70	0604017A	Robotics Development	04				39,608		39,608	U
71	0604020A	Cross Functional Team (CFT) Advanced Development & Prototyping	04							U
72	0604100A	Analysis Of Alternatives	04				9,921		9,921	U
73	0604113A	Future Tactical Unmanned Aircraft System (FTUAS)	04							U
74	0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04				76,728		76,728	U
75	0604115A	Technology Maturation Initiatives	04				115,221		115,221	U
76	0604117A	Maneuver - Short Range Air Defense (M-SHORAD)	04				20,000		20,000	U
77	0604118A	TRACTOR BEAM	04				10,400		10,400	U
78	0604120A	Assured Positioning, Navigation and Timing (PNT)	04				164,967		164,967	U
79	0604121A	Synthetic Training Environment Refinement & Prototyping	04				1,600		1,600	U

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se
65	0603790A	NATO Research and Development	04	3,687		3,687	U
66	0603801A	Aviation - Adv Dev	04	10,793		10,793	U
67	0603804A	Logistics and Engineer Equipment - Adv Dev	04	14,248		14,248	U
68	0603807A	Medical Systems - Adv Dev	04	34,284		34,284	U
69	0603827A	Soldier Systems - Advanced Development	04	18,044		18,044	U
70	0604017A	Robotics Development	04	95,660		95,660	U
71	0604020A	Cross Functional Team (CFT) Advanced Development & Prototyping	04	38,000		38,000	U
72	0604100A	Analysis Of Alternatives	04	9,765		9,765	U
73	0604113A	Future Tactical Unmanned Aircraft System (FTUAS)	04	12,393		12,393	U
74	0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04	120,374		120,374	U
75	0604115A	Technology Maturation Initiatives	04	95,347		95,347	U
76	0604117A	Maneuver - Short Range Air Defense (M-SHORAD)	04	95,085	23,000	118,085	U
77	0604118A	TRACTOR BEAM	04	52,894		52,894	U
78	0604120A	Assured Positioning, Navigation and Timing (PNT)	04				U
79	0604121A	Synthetic Training Environment Refinement & Prototyping	04	77,939		77,939	U

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Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S e c
80	0604319A	Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)	04		11,303	11,303			U
81	0305251A	Cyberspace Operations Forces and Force Support	04	29,336	56,492	56,492			U
82	1206120A	Assured Positioning, Navigation and Timing (PNT)	04						U
83	1206308A	Army Space Systems Integration	04		20,432	20,432			U
		Advanced Component Development & Prototypes		619,976	890,889	890,889	18,000	18,000	
84	0604201A	Aircraft Avionics	05	54,915	30,153	30,153			U
85	0604270A	Electronic Warfare Development	05	33,419	71,671	71,671			U
86	0604290A	Mid-tier Networking Vehicular Radio (MNVR)	05	9,363	10,589	10,589			U
87	0604321A	All Source Analysis System	05	11,958	4,774	4,774			U
88	0604328A	TRACTOR CAGE	05	12,525	17,252	17,252			U
89	0604601A	Infantry Support Weapons	05	63,842	87,643	87,643			U
90	0604604A	Medium Tactical Vehicles	05		6,039	6,039			U
91	0604611A	JAVELIN	05	19,241	21,095	21,095			U
92	0604622A	Family of Heavy Tactical Vehicles	05	10,989	10,507	10,507			U
93	0604633A	Air Traffic Control	05	3,326	3,536	3,536			U
94	0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05	32,315					U
95	0604642A	Light Tactical Wheeled Vehicles	05	476	7,000	7,000			U

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80	0604319A	Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)	04				11,303		11,303	U
81	0305251A	Cyberspace Operations Forces and Force Support	04				56,492		56,492	U
82	1206120A	Assured Positioning, Navigation and Timing (PNT)	04							U
83	1206308A	Army Space Systems Integration	04				20,432		20,432	U
	Advanced Component Development & Prototypes			8,700	-8,700		917,589	-8,700	908,889	
84	0604201A	Aircraft Avionics	05				30,153		30,153	U
85	0604270A	Electronic Warfare Development	05				71,671		71,671	U
86	0604290A	Mid-tier Networking Vehicular Radio (MNVR)	05				10,589		10,589	U
87	0604321A	All Source Analysis System	05				4,774		4,774	U
88	0604328A	TRACTOR CAGE	05				17,252		17,252	U
89	0604601A	Infantry Support Weapons	05				87,643		87,643	U
90	0604604A	Medium Tactical Vehicles	05				6,039		6,039	U
91	0604611A	JAVELIN	05				21,095		21,095	U
92	0604622A	Family of Heavy Tactical Vehicles	05				10,507		10,507	U
93	0604633A	Air Traffic Control	05				3,536		3,536	U
94	0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05							U
95	0604642A	Light Tactical Wheeled Vehicles	05				7,000		7,000	U

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se
80	0604319A	Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)	04	51,030		51,030	U
81	0305251A	Cyberspace Operations Forces and Force Support	04	65,817		65,817	U
82	1206120A	Assured Positioning, Navigation and Timing (PNT)	04	146,300		146,300	U
83	1206308A	Army Space Systems Integration	04	38,319		38,319	U
		Advanced Component Development & Prototypes		1,329,393	28,500	1,357,893	
84	0604201A	Aircraft Avionics	05	32,293		32,293	U
85	0604270A	Electronic Warfare Development	05	78,699		78,699	U
86	0604290A	Mid-tier Networking Vehicular Radio (MNVR)	05				U
87	0604321A	All Source Analysis System	05				U
88	0604328A	TRACTOR CAGE	05	17,050	12,000	29,050	U
89	0604601A	Infantry Support Weapons	05	83,155		83,155	U
90	0604604A	Medium Tactical Vehicles	05	3,704		3,704	U
91	0604611A	JAVELIN	05	10,623		10,623	U
92	0604622A	Family of Heavy Tactical Vehicles	05	11,950		11,950	U
93	0604633A	Air Traffic Control	05	12,347		12,347	U
94	0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05				U
95	0604642A	Light Tactical Wheeled Vehicles	05	8,212		8,212	U

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Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S e c
96	0604645A	Armored Systems Modernization (ASM) - Eng Dev	05	9,306	36,242	36,242			U
97	0604710A	Night Vision Systems - Eng Dev	05	76,491	108,504	108,504			U
98	0604713A	Combat Feeding, Clothing, and Equipment	05	1,975	3,702	3,702			U
99	0604715A	Non-System Training Devices - Eng Dev	05	33,888	43,575	43,575			U
100	0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05	200,205	28,726	28,726			U
101	0604742A	Constructive Simulation Systems Development	05	17,363	18,562	18,562			U
102	0604746A	Automatic Test Equipment Development	05	8,503	8,344	8,344			U
103	0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05	10,150	11,270	11,270			U
104	0604768A	Brilliant Anti-Armor Submunition (BAT)	05		10,000	10,000			U
105	0604780A	Combined Arms Tactical Trainer (CATT) Core	05	14,538	18,566	18,566			U
106	0604798A	Brigade Analysis, Integration and Evaluation	05	101,927	145,360	145,360			U
107	0604802A	Weapons and Munitions - Eng Dev	05	75,845	145,232	145,232			U
108	0604804A	Logistics and Engineer Equipment - Eng Dev	05	76,374	90,965	90,965			U
109	0604805A	Command, Control, Communications Systems - Eng Dev	05	4,166	9,910	9,910			U

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Line No	Program Element Number	Item	Act	FY 2018 Emergency Requests** Emergency	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + e Emergency c	S
96	0604645A	Armored Systems Modernization (ASM) - Eng Dev	05				36,242		36,242	U
97	0604710A	Night Vision Systems - Eng Dev	05				108,504		108,504	U
98	0604713A	Combat Feeding, Clothing, and Equipment	05				3,702		3,702	U
99	0604715A	Non-System Training Devices - Eng Dev	05				43,575		43,575	U
100	0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05				28,726		28,726	U
101	0604742A	Constructive Simulation Systems Development	05				18,562		18,562	U
102	0604746A	Automatic Test Equipment Development	05				8,344		8,344	U
103	0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05				11,270		11,270	U
104	0604768A	Brilliant Anti-Armor Submunition (BAT)	05				10,000		10,000	U
105	0604780A	Combined Arms Tactical Trainer (CATT) Core	05				18,566		18,566	U
106	0604798A	Brigade Analysis, Integration and Evaluation	05				145,360		145,360	U
107	0604802A	Weapons and Munitions - Eng Dev	05				145,232		145,232	U
108	0604804A	Logistics and Engineer Equipment - Eng Dev	05				90,965		90,965	U
109	0604805A	Command, Control, Communications Systems - Eng Dev	05				9,910		9,910	U

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96	0604645A	Armored Systems Modernization (ASM) - Eng Dev	05	393,613		393,613	U
97	0604710A	Night Vision Systems - Eng Dev	05	139,614		139,614	U
98	0604713A	Combat Feeding, Clothing, and Equipment	05	4,507		4,507	U
99	0604715A	Non-System Training Devices - Eng Dev	05	49,436		49,436	U
100	0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05	95,172	119,300	214,472	U
101	0604742A	Constructive Simulation Systems Development	05	22,628		22,628	U
102	0604746A	Automatic Test Equipment Development	05	13,297		13,297	U
103	0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05	9,145		9,145	U
104	0604768A	Brilliant Anti-Armor Submunition (BAT)	05	9,894		9,894	U
105	0604780A	Combined Arms Tactical Trainer (CATT) Core	05	21,964		21,964	U
106	0604798A	Brigade Analysis, Integration and Evaluation	05	49,288		49,288	U
107	0604802A	Weapons and Munitions - Eng Dev	05	183,100		183,100	U
108	0604804A	Logistics and Engineer Equipment - Eng Dev	05	79,706		79,706	U
109	0604805A	Command, Control, Communications Systems - Eng Dev	05	15,970		15,970	U

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Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S e c
110	0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05	36,237	39,238	39,238			U
111	0604808A	Landmine Warfare/Barrier - Eng Dev	05	32,069	34,684	34,684			U
112	0604818A	Army Tactical Command & Control Hardware & Software	05	169,375	164,409	164,409			U
113	0604820A	Radar Development	05	15,368	32,968	32,968			U
114	0604822A	General Fund Enterprise Business System (GFEBs)	05	11,044	49,554	49,554			U
115	0604823A	Firefinder	05	6,177	45,605	45,605			U
116	0604827A	Soldier Systems - Warrior Dem/Val	05	11,929	16,127	16,127			U
117	0604852A	Suite of Survivability Enhancement Systems - EMD	05		98,600	98,600			U
118	0604854A	Artillery Systems - EMD	05	1,689	1,972	1,972			U
119	0605013A	Information Technology Development	05	70,104	81,776	81,776			U
120	0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05	149,597	172,361	172,361			U
121	0605028A	Armored Multi-Purpose Vehicle (AMPV)	05	177,133	199,778	199,778			U
122	0605029A	Integrated Ground Security Surveillance Response Capability (IGSSR-C)	05	4,789	4,418	4,418			U
123	0605030A	Joint Tactical Network Center (JTNC)	05	14,463	15,877	15,877			U
124	0605031A	Joint Tactical Network (JTN)	05	16,430	44,150	44,150			U
125	0605032A	TRACTOR TIRE	05	27,254	34,670	34,670	5,000	5,000	U

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110	0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05				39,238		39,238	U
111	0604808A	Landmine Warfare/Barrier - Eng Dev	05				34,684		34,684	U
112	0604818A	Army Tactical Command & Control Hardware & Software	05				164,409		164,409	U
113	0604820A	Radar Development	05				32,968		32,968	U
114	0604822A	General Fund Enterprise Business System (GFEBS)	05				49,554		49,554	U
115	0604823A	Firefinder	05				45,605		45,605	U
116	0604827A	Soldier Systems - Warrior Dem/Val	05				16,127		16,127	U
117	0604852A	Suite of Survivability Enhancement Systems - EMD	05				98,600		98,600	U
118	0604854A	Artillery Systems - EMD	05				1,972		1,972	U
119	0605013A	Information Technology Development	05				81,776		81,776	U
120	0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05				172,361		172,361	U
121	0605028A	Armored Multi-Purpose Vehicle (AMPV)	05				199,778		199,778	U
122	0605029A	Integrated Ground Security Surveillance Response Capability (IGSSR-C)	05				4,418		4,418	U
123	0605030A	Joint Tactical Network Center (JTNC)	05				15,877		15,877	U
124	0605031A	Joint Tactical Network (JTN)	05				44,150		44,150	U
125	0605032A	TRACTOR TIRE	05				39,670		39,670	U

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110	0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05	44,542		44,542	U
111	0604808A	Landmine Warfare/Barrier - Eng Dev	05	50,817		50,817	U
112	0604818A	Army Tactical Command & Control Hardware & Software	05	178,693		178,693	U
113	0604820A	Radar Development	05	39,338		39,338	U
114	0604822A	General Fund Enterprise Business System (GFEBS)	05	37,851		37,851	U
115	0604823A	Firefinder	05	45,473		45,473	U
116	0604827A	Soldier Systems - Warrior Dem/Val	05	10,395		10,395	U
117	0604852A	Suite of Survivability Enhancement Systems - EMD	05	69,204		69,204	U
118	0604854A	Artillery Systems - EMD	05	1,781		1,781	U
119	0605013A	Information Technology Development	05	113,758		113,758	U
120	0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05	166,603		166,603	U
121	0605028A	Armored Multi-Purpose Vehicle (AMPV)	05	118,239		118,239	U
122	0605029A	Integrated Ground Security Surveillance Response Capability (IGSSR-C)	05	3,211		3,211	U
123	0605030A	Joint Tactical Network Center (JTNC)	05	15,889		15,889	U
124	0605031A	Joint Tactical Network (JTN)	05	41,972		41,972	U
125	0605032A	TRACTOR TIRE	05	41,166	66,760	107,926	U

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126	0605033A	Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)	05	4,838	5,207	5,207			U
127	0605034A	Tactical Security System (TSS)	05	2,792	4,727	4,727			U
128	0605035A	Common Infrared Countermeasures (CIRCM)	05	90,685	105,778	105,778	21,540	21,540	U
129	0605036A	Combating Weapons of Mass Destruction (CWMD)	05	2,008	6,927	6,927			U
130	0605037A	Evidence Collection and Detainee Processing	05		214	214			U
131	0605038A	Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) Sensor Suite	05		16,125	16,125			U
132	0605041A	Defensive CYBER Tool Development	05	32,535	55,165	55,165			U
133	0605042A	Tactical Network Radio Systems (Low-Tier)	05	14,198	20,076	20,076			U
134	0605047A	Contract Writing System	05	19,868	20,322	20,322			U
135	0605049A	Missile Warning System Modernization (MWSM)	05		55,810	55,810			U
136	0605051A	Aircraft Survivability Development	05	121,530	30,879	30,879	30,100	30,100	U
137	0605052A	Indirect Fire Protection Capability Inc 2 - Block 1	05	80,781	175,069	175,069			U
138	0605053A	Ground Robotics	05		70,760	70,760			U
139	0605054A	Emerging Technology Initiatives	05						U

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126	0605033A	Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)	05				5,207		5,207	U
127	0605034A	Tactical Security System (TSS)	05				4,727		4,727	U
128	0605035A	Common Infrared Countermeasures (CIRCM)	05				127,318		127,318	U
129	0605036A	Combating Weapons of Mass Destruction (CWMD)	05				6,927		6,927	U
130	0605037A	Evidence Collection and Detainee Processing	05				214		214	U
131	0605038A	Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) Sensor Suite	05				16,125		16,125	U
132	0605041A	Defensive CYBER Tool Development	05				55,165		55,165	U
133	0605042A	Tactical Network Radio Systems (Low-Tier)	05				20,076		20,076	U
134	0605047A	Contract Writing System	05				20,322		20,322	U
135	0605049A	Missile Warning System Modernization (MWSM)	05				55,810		55,810	U
136	0605051A	Aircraft Survivability Development	05				60,979		60,979	U
137	0605052A	Indirect Fire Protection Capability Inc 2 - Block 1	05				175,069		175,069	U
138	0605053A	Ground Robotics	05				70,760		70,760	U
139	0605054A	Emerging Technology Initiatives	05							U

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se
126	0605033A	Ground-Based Operational Surveillance System - Expeditionary (GBOSS-E)	05	5,175		5,175	U
127	0605034A	Tactical Security System (TSS)	05	4,496		4,496	U
128	0605035A	Common Infrared Countermeasures (CIRCM)	05	51,178	2,670	53,848	U
129	0605036A	Combating Weapons of Mass Destruction (CWMD)	05	11,311		11,311	U
130	0605037A	Evidence Collection and Detainee Processing	05				U
131	0605038A	Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) Sensor Suite	05	17,154		17,154	U
132	0605041A	Defensive CYBER Tool Development	05	36,626		36,626	U
133	0605042A	Tactical Network Radio Systems (Low-Tier)	05	3,829		3,829	U
134	0605047A	Contract Writing System	05	41,928		41,928	U
135	0605049A	Missile Warning System Modernization (MWSM)	05	28,276		28,276	U
136	0605051A	Aircraft Survivability Development	05	21,965	34,933	56,898	U
137	0605052A	Indirect Fire Protection Capability Inc 2 - Block 1	05	157,710		157,710	U
138	0605053A	Ground Robotics	05	86,167		86,167	U
139	0605054A	Emerging Technology Initiatives	05	42,866		42,866	U

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140	0605380A	AMF Joint Tactical Radio System (JTRS)	05	4,088	8,965	8,965			U
141	0605450A	Joint Air-to-Ground Missile (JAGM)	05	47,446	34,626	34,626			U
142	0605457A	Army Integrated Air and Missile Defense (AIAMD)	05	273,240	336,420	336,420			U
143	0605766A	National Capabilities Integration (MIP)	05	4,955	6,882	6,882			U
144	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	05	11,086	23,467	23,467			U
145	0605830A	Aviation Ground Support Equipment	05	2,060	6,930	6,930			U
146	0210609A	Paladin Integrated Management (PIM)	05	39,902	6,112	6,112			U
147	0303032A	TROJAN - RH12	05	4,273	4,431	4,431	1,200	1,200	U
148	0303267A	Auctioned Spectrum Relocation Fund	05	34,967					U
149	0303367A	Spectrum Access Research and Development	05	66,125					U
150	0304270A	Electronic Warfare Development	05	18,425	14,616	14,616			U
151	1205117A	Tractor Bears	05		17,928	17,928			U
		System Development & Demonstration		2,502,560	3,012,840	3,012,840	57,840	57,840	
152	0604256A	Threat Simulator Development	06	28,883	22,862	22,862			U
153	0604258A	Target Systems Development	06	18,518	13,902	13,902			U
154	0604759A	Major T&E Investment	06	93,668	102,901	102,901			U
155	0605103A	Rand Arroyo Center	06	19,863	20,140	20,140			U

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140	0605380A	AMF Joint Tactical Radio System (JTRS)	05				8,965		8,965	U
141	0605450A	Joint Air-to-Ground Missile (JAGM)	05				34,626		34,626	U
142	0605457A	Army Integrated Air and Missile Defense (AIAMD)	05				336,420		336,420	U
143	0605766A	National Capabilities Integration (MIP)	05				6,882		6,882	U
144	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	05				23,467		23,467	U
145	0605830A	Aviation Ground Support Equipment	05				6,930		6,930	U
146	0210609A	Paladin Integrated Management (PIM)	05				6,112		6,112	U
147	0303032A	TROJAN - RH12	05				5,631		5,631	U
148	0303267A	Auctioned Spectrum Relocation Fund	05							U
149	0303367A	Spectrum Access Research and Development	05							U
150	0304270A	Electronic Warfare Development	05				14,616		14,616	U
151	1205117A	Tractor Bears	05				17,928		17,928	U
		System Development & Demonstration					3,070,680		3,070,680	
152	0604256A	Threat Simulator Development	06				22,862		22,862	U
153	0604258A	Target Systems Development	06				13,902		13,902	U
154	0604759A	Major T&E Investment	06				102,901		102,901	U
155	0605103A	Rand Arroyo Center	06				20,140		20,140	U

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140	0605380A	AMF Joint Tactical Radio System (JTRS)	05	15,984		15,984	U
141	0605450A	Joint Air-to-Ground Missile (JAGM)	05	11,773		11,773	U
142	0605457A	Army Integrated Air and Missile Defense (AIAMD)	05	277,607		277,607	U
143	0605766A	National Capabilities Integration (MIP)	05	12,340		12,340	U
144	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Ph	05	2,686		2,686	U
145	0605830A	Aviation Ground Support Equipment	05	2,706		2,706	U
146	0210609A	Paladin Integrated Management (PIM)	05				U
147	0303032A	TROJAN - RH12	05	4,521	1,200	5,721	U
148	0303267A	Auctioned Spectrum Relocation Fund	05				U
149	0303367A	Spectrum Access Research and Development	05				U
150	0304270A	Electronic Warfare Development	05	8,922		8,922	U
151	1205117A	Tractor Bears	05	23,170		23,170	U
		System Development & Demonstration		3,192,689	236,863	3,429,552	
152	0604256A	Threat Simulator Development	06	12,835		12,835	U
153	0604258A	Target Systems Development	06	12,135		12,135	U
154	0604759A	Major T&E Investment	06	82,996		82,996	U
155	0605103A	Rand Arroyo Center	06	19,821		19,821	U

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Line	Program Element No Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S e c
156	0605301A	Army Kwajalein Atoll	06	219,271	246,663	246,663			U
157	0605326A	Concepts Experimentation Program	06	24,668	29,820	29,820			U
158	0605502A	Small Business Innovative Research	06	230,691					U
159	0605601A	Army Test Ranges and Facilities	06	305,238	307,588	307,588			U
160	0605602A	Army Technical Test Instrumentation and Targets	06	70,523	49,242	49,242			U
161	0605604A	Survivability/Lethality Analysis	06	38,245	41,843	41,843			U
162	0605606A	Aircraft Certification	06	4,486	4,804	4,804			U
163	0605702A	Meteorological Support to RDT&E Activities	06	6,793	7,238	7,238			U
164	0605706A	Materiel Systems Analysis	06	21,510	21,890	21,890			U
165	0605709A	Exploitation of Foreign Items	06	12,415	12,684	12,684			U
166	0605712A	Support of Operational Testing	06	49,580	51,040	51,040			U
167	0605716A	Army Evaluation Center	06	55,460	56,246	56,246			U
168	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06	7,653	1,829	1,829			U
169	0605801A	Programwide Activities	06	50,971	55,060	55,060			U
170	0605803A	Technical Information Activities	06	29,905	33,934	33,934			U
171	0605805A	Munitions Standardization, Effectiveness and Safety	06	63,983	43,444	43,444			U
172	0605857A	Environmental Quality Technology Mgmt Support	06	2,048	5,087	5,087			U

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Line	Program Element No Number	Item	Act	FY 2018 Emergency Requests** Emergency	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency	S e c
156	0605301A	Army Kwajalein Atoll	06				246,663		246,663	U
157	0605326A	Concepts Experimentation Program	06				29,820		29,820	U
158	0605502A	Small Business Innovative Research	06							U
159	0605601A	Army Test Ranges and Facilities	06				307,588		307,588	U
160	0605602A	Army Technical Test Instrumentation and Targets	06				49,242		49,242	U
161	0605604A	Survivability/Lethality Analysis	06				41,843		41,843	U
162	0605606A	Aircraft Certification	06				4,804		4,804	U
163	0605702A	Meteorological Support to RDT&E Activities	06				7,238		7,238	U
164	0605706A	Materiel Systems Analysis	06				21,890		21,890	U
165	0605709A	Exploitation of Foreign Items	06				12,684		12,684	U
166	0605712A	Support of Operational Testing	06				51,040		51,040	U
167	0605716A	Army Evaluation Center	06				56,246		56,246	U
168	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06				1,829		1,829	U
169	0605801A	Programwide Activities	06				55,060		55,060	U
170	0605803A	Technical Information Activities	06				33,934		33,934	U
171	0605805A	Munitions Standardization, Effectiveness and Safety	06				43,444		43,444	U
172	0605857A	Environmental Quality Technology Mgmt Support	06				5,087		5,087	U

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156	0605301A	Army Kwajalein Atoll	06	246,574		246,574	U
157	0605326A	Concepts Experimentation Program	06	30,430		30,430	U
158	0605502A	Small Business Innovative Research	06				U
159	0605601A	Army Test Ranges and Facilities	06	305,759		305,759	U
160	0605602A	Army Technical Test Instrumentation and Targets	06	62,379		62,379	U
161	0605604A	Survivability/Lethality Analysis	06	40,496		40,496	U
162	0605606A	Aircraft Certification	06	3,941		3,941	U
163	0605702A	Meteorological Support to RDT&E Activities	06	9,767		9,767	U
164	0605706A	Materiel Systems Analysis	06	21,226		21,226	U
165	0605709A	Exploitation of Foreign Items	06	13,026		13,026	U
166	0605712A	Support of Operational Testing	06	52,718		52,718	U
167	0605716A	Army Evaluation Center	06	57,049		57,049	U
168	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06	2,801		2,801	U
169	0605801A	Programwide Activities	06	60,942		60,942	U
170	0605803A	Technical Information Activities	06	29,050		29,050	U
171	0605805A	Munitions Standardization, Effectiveness and Safety	06	42,332		42,332	U
172	0605857A	Environmental Quality Technology Mgmt Support	06	3,216		3,216	U

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173	0605898A	Army Direct Report Headquarters - R&D - MHA	06	49,287	54,679	54,679			U
174	0606001A	Military Ground-Based CREW Technology	06		7,916	7,916			U
175	0606002A	Ronald Reagan Ballistic Missile Defense Test Site	06		61,254	61,254			U
176	0606003A	CounterIntel and Human Intel Modernization	06						U
177	0606942A	Assessments and Evaluations Cyber Vulnerabilities	06						U
178	0303260A	Defense Military Deception Initiative	06	1,923	1,779	1,779			U
179	0909980A	Judgment Fund Reimbursement	06	7,893					U
180	0909999A	Financing for Cancelled Account Adjustments	06	6					U
		RDT&E Management Support		1,413,481	1,253,845	1,253,845			
181	0603778A	MLRS Product Improvement Program	07	34,391	8,929	8,929			U
182	0603813A	TRACTOR PULL	07	3,960	4,014	4,014			U
183	0605024A	Anti-Tamper Technology Support	07	3,498	4,094	4,094			U
184	0607131A	Weapons and Munitions Product Improvement Programs	07	19,969	15,738	15,738			U
185	0607133A	TRACTOR SMOKE	07	4,479	4,513	4,513			U
186	0607134A	Long Range Precision Fires (LRPF)	07	36,322	102,014	102,014			U
187	0607135A	Apache Product Improvement Program	07	60,995	59,977	59,977			U

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Line	Program Element No Number	Item	Act	FY 2018 Emergency Requests**	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency	S e c
173	0605898A	Army Direct Report Headquarters - R&D - MHA	06				54,679		54,679	U
174	0606001A	Military Ground-Based CREW Technology	06				7,916		7,916	U
175	0606002A	Ronald Reagan Ballistic Missile Defense Test Site	06				61,254		61,254	U
176	0606003A	CounterIntel and Human Intel Modernization	06							U
177	0606942A	Assessments and Evaluations Cyber Vulnerabilities	06							U
178	0303260A	Defense Military Deception Initiative	06				1,779		1,779	U
179	0909980A	Judgment Fund Reimbursement	06							U
180	0909999A	Financing for Cancelled Account Adjustments	06							U
		RDT&E Management Support					1,253,845		1,253,845	
181	0603778A	MLRS Product Improvement Program	07				8,929		8,929	U
182	0603813A	TRACTOR PULL	07				4,014		4,014	U
183	0605024A	Anti-Tamper Technology Support	07				4,094		4,094	U
184	0607131A	Weapons and Munitions Product Improvement Programs	07				15,738		15,738	U
185	0607133A	TRACTOR SMOKE	07				4,513		4,513	U
186	0607134A	Long Range Precision Fires (LRPF)	07				102,014		102,014	U
187	0607135A	Apache Product Improvement Program	07				59,977		59,977	U

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173	0605898A	Army Direct Report Headquarters - R&D - MHA	06	54,145		54,145	U
174	0606001A	Military Ground-Based CREW Technology	06	4,896		4,896	U
175	0606002A	Ronald Reagan Ballistic Missile Defense Test Site	06	63,011		63,011	U
176	0606003A	CounterIntel and Human Intel Modernization	06	2,636		2,636	U
177	0606942A	Assessments and Evaluations Cyber Vulnerabilities	06	88,300		88,300	U
178	0303260A	Defense Military Deception Initiative	06				U
179	0909980A	Judgment Fund Reimbursement	06				U
180	0909999A	Financing for Cancelled Account Adjustments	06				U
		RDT&E Management Support		1,322,481		1,322,481	
181	0603778A	MLRS Product Improvement Program	07	8,886		8,886	U
182	0603813A	TRACTOR PULL	07	4,067		4,067	U
183	0605024A	Anti-Tamper Technology Support	07	4,254		4,254	U
184	0607131A	Weapons and Munitions Product Improvement Programs	07	16,022	2,548	18,570	U
185	0607133A	TRACTOR SMOKE	07	4,577	7,780	12,357	U
186	0607134A	Long Range Precision Fires (LRPF)	07	186,475		186,475	U
187	0607135A	Apache Product Improvement Program	07	31,049		31,049	U

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Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S e c
188	0607136A	Blackhawk Product Improvement Program	07	44,966	34,416	34,416			U
189	0607137A	Chinook Product Improvement Program	07	88,314	194,567	194,567			U
190	0607138A	Fixed Wing Product Improvement Program	07	765	9,981	9,981			U
191	0607139A	Improved Turbine Engine Program	07	111,638	204,304	204,304			U
192	0607140A	Emerging Technologies from NIE	07	2,278	1,023	1,023			U
193	0607141A	Logistics Automation	07	1,542	1,504	1,504			U
194	0607142A	Aviation Rocket System Product Improvement and Development	07		10,064	10,064			U
195	0607143A	Unmanned Aircraft System Universal Products	07		38,463	38,463			U
196	0607665A	Family of Biometrics	07	11,632	6,159	6,159			U
197	0607865A	Patriot Product Improvement	07	48,073	90,217	90,217			U
198	0202429A	Aerostat Joint Project - COCOM Exercise	07	6,178	6,749	6,749			U
199	0203728A	Joint Automated Deep Operation Coordination System (JADOCS)	07	29,412	33,520	33,520			U
200	0203735A	Combat Vehicle Improvement Programs	07	340,353	343,175	343,175			U
201	0203740A	Maneuver Control System	07	3,943	6,639	6,639			U
202	0203743A	155mm Self-Propelled Howitzer Improvements	07		40,784	40,784			U
203	0203744A	Aircraft Modifications/Product Improvement Programs	07	32,397	39,358	39,358			U

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Line	Program Element No Number	Item	Act	FY 2018 Emergency Requests** Emergency	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + e Emergency c	S
188	0607136A	Blackhawk Product Improvement Program	07				34,416		34,416	U
189	0607137A	Chinook Product Improvement Program	07				194,567		194,567	U
190	0607138A	Fixed Wing Product Improvement Program	07				9,981		9,981	U
191	0607139A	Improved Turbine Engine Program	07				204,304		204,304	U
192	0607140A	Emerging Technologies from NIE	07				1,023		1,023	U
193	0607141A	Logistics Automation	07				1,504		1,504	U
194	0607142A	Aviation Rocket System Product Improvement and Development	07				10,064		10,064	U
195	0607143A	Unmanned Aircraft System Universal Products	07				38,463		38,463	U
196	0607665A	Family of Biometrics	07				6,159		6,159	U
197	0607865A	Patriot Product Improvement	07				90,217		90,217	U
198	0202429A	Aerostat Joint Project - COCOM Exercise	07				6,749		6,749	U
199	0203728A	Joint Automated Deep Operation Coordination System (JADOCS)	07				33,520		33,520	U
200	0203735A	Combat Vehicle Improvement Programs	07				343,175		343,175	U
201	0203740A	Maneuver Control System	07				6,639		6,639	U
202	0203743A	155mm Self-Propelled Howitzer Improvements	07				40,784		40,784	U
203	0203744A	Aircraft Modifications/Product Improvement Programs	07				39,358		39,358	U

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188	0607136A	Blackhawk Product Improvement Program	07	35,240		35,240	U
189	0607137A	Chinook Product Improvement Program	07	157,822		157,822	U
190	0607138A	Fixed Wing Product Improvement Program	07	4,189		4,189	U
191	0607139A	Improved Turbine Engine Program	07	192,637		192,637	U
192	0607140A	Emerging Technologies from NIE	07				U
193	0607141A	Logistics Automation	07				U
194	0607142A	Aviation Rocket System Product Improvement and Development	07	60,860		60,860	U
195	0607143A	Unmanned Aircraft System Universal Products	07	52,019		52,019	U
196	0607665A	Family of Biometrics	07	2,400		2,400	U
197	0607865A	Patriot Product Improvement	07	65,369		65,369	U
198	0202429A	Aerostat Joint Project - COCOM Exercise	07	1		1	U
199	0203728A	Joint Automated Deep Operation Coordination System (JADOCS)	07	30,954		30,954	U
200	0203735A	Combat Vehicle Improvement Programs	07	411,927		411,927	U
201	0203740A	Maneuver Control System	07				U
202	0203743A	155mm Self-Propelled Howitzer Improvements	07	40,676		40,676	U
203	0203744A	Aircraft Modifications/Product Improvement Programs	07	17,706		17,706	U

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204	0203752A	Aircraft Engine Component Improvement Program	07	249	145	145			U
205	0203758A	Digitization	07	6,234	4,803	4,803			U
206	0203801A	Missile/Air Defense Product Improvement Program	07	24,925	2,723	2,723	15,000	15,000	U
207	0203802A	Other Missile Product Improvement Programs	07	8,283	5,000	5,000			U
208	0203808A	TRACTOR CARD	07	20,333	37,883	37,883			U
209	0205402A	Integrated Base Defense - Operational System Dev	07	3,450					U
210	0205410A	Materials Handling Equipment	07	119	1,582	1,582			U
211	0205412A	Environmental Quality Technology - Operational System Dev	07		195	195			U
212	0205456A	Lower Tier Air and Missile Defense (AMD) System	07	61,449	78,926	78,926			U
213	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07	21,196	102,807	102,807			U
214	0208053A	Joint Tactical Ground System	07	12,649					U
216	0303028A	Security and Intelligence Activities	07	15,719	13,807	13,807			U
217	0303140A	Information Systems Security Program	07	36,892	132,438	132,438			U
218	0303141A	Global Combat Support System	07	26,176	64,370	64,370			U
219	0303142A	SATCOM Ground Environment (SPACE)	07	18,761					U
220	0303150A	WWMCCS/Global Command and Control System	07	4,536	10,475	10,475			U

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204	0203752A	Aircraft Engine Component Improvement Program	07				145		145	U
205	0203758A	Digitization	07				4,803		4,803	U
206	0203801A	Missile/Air Defense Product Improvement Program	07				17,723		17,723	U
207	0203802A	Other Missile Product Improvement Programs	07				5,000		5,000	U
208	0203808A	TRACTOR CARD	07				37,883		37,883	U
209	0205402A	Integrated Base Defense - Operational System Dev	07							U
210	0205410A	Materials Handling Equipment	07				1,582		1,582	U
211	0205412A	Environmental Quality Technology - Operational System Dev	07				195		195	U
212	0205456A	Lower Tier Air and Missile Defense (AMD) System	07				78,926		78,926	U
213	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07				102,807		102,807	U
214	0208053A	Joint Tactical Ground System	07							U
216	0303028A	Security and Intelligence Activities	07				13,807		13,807	U
217	0303140A	Information Systems Security Program	07				132,438		132,438	U
218	0303141A	Global Combat Support System	07				64,370		64,370	U
219	0303142A	SATCOM Ground Environment (SPACE)	07							U
220	0303150A	WWMCCS/Global Command and Control System	07				10,475		10,475	U

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Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se
204	0203752A	Aircraft Engine Component Improvement Program	07	146		146	U
205	0203758A	Digitization	07	6,316		6,316	U
206	0203801A	Missile/Air Defense Product Improvement Program	07	1,643	2,000	3,643	U
207	0203802A	Other Missile Product Improvement Programs	07	4,947		4,947	U
208	0203808A	TRACTOR CARD	07	34,050		34,050	U
209	0205402A	Integrated Base Defense - Operational System Dev	07		8,000	8,000	U
210	0205410A	Materials Handling Equipment	07	1,464		1,464	U
211	0205412A	Environmental Quality Technology - Operational System Dev	07	249		249	U
212	0205456A	Lower Tier Air and Missile Defense (AMD) System	07	79,283		79,283	U
213	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07	154,102		154,102	U
214	0208053A	Joint Tactical Ground System	07				U
216	0303028A	Security and Intelligence Activities	07	12,280	23,199	35,479	U
217	0303140A	Information Systems Security Program	07	68,533		68,533	U
218	0303141A	Global Combat Support System	07	68,619		68,619	U
219	0303142A	SATCOM Ground Environment (SPACE)	07				U
220	0303150A	WWMCCS/Global Command and Control System	07	2,034		2,034	U

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Line	Program Element No Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S e c
223	0305172A	Combined Advanced Applications	07		1,100	1,100			U
224	0305179A	Integrated Broadcast Service (IBS)	07						U
225	0305204A	Tactical Unmanned Aerial Vehicles	07	8,218	9,433	9,433	7,492	7,492	U
226	0305206A	Airborne Reconnaissance Systems	07	11,799	5,080	5,080	15,000	15,000	U
227	0305208A	Distributed Common Ground/Surface Systems	07	32,284	24,700	24,700			U
228	0305219A	MQ-1C Gray Eagle UAS	07	13,470	9,574	9,574			U
229	0305232A	RQ-11 UAV	07	1,613	2,191	2,191			U
230	0305233A	RQ-7 UAV	07	4,597	12,773	12,773			U
231	0307665A	Biometrics Enabled Intelligence	07	8,854	2,537	2,537	6,036	6,036	U
232	0310349A	Win-T Increment 2 - Initial Networking	07	4,680	4,723	4,723			U
233	0708045A	End Item Industrial Preparedness Activities	07	59,891	60,877	60,877			U
234	1203142A	SATCOM Ground Environment (SPACE)	07		11,959	11,959			U
235	1208053A	Joint Tactical Ground System	07		10,228	10,228			U
9999	9999999999	Classified Programs		4,625	7,154	7,154			U
		Operational Systems Development		1,296,107	1,877,685	1,877,685	43,528	43,528	
236	0901560A	Continuing Resolution Programs	20		-1,151,993	-1,151,993	222,988	222,988	U
		Undistributed			-1,151,993	-1,151,993	222,988	222,988	
		Total Research, Development, Test & Eval, Army		8,852,507	8,273,447	8,273,447	342,356	342,356	

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Department of the Army
FY 2019 President's Budget
Exhibit R-1 FY 2019 President's Budget
Total Obligational Authority
(Dollars in Thousands)

18 Jan 2018

Appropriation: 2040A Research, Development, Test & Eval, Army

Line	Program Element No Number	Item	Act	FY 2018 Emergency Requests** Emergency	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + e Emergency c	S
223	0305172A	Combined Advanced Applications	07				1,100		1,100	U
224	0305179A	Integrated Broadcast Service (IBS)	07							U
225	0305204A	Tactical Unmanned Aerial Vehicles	07				16,925		16,925	U
226	0305206A	Airborne Reconnaissance Systems	07				20,080		20,080	U
227	0305208A	Distributed Common Ground/Surface Systems	07				24,700		24,700	U
228	0305219A	MQ-1C Gray Eagle UAS	07				9,574		9,574	U
229	0305232A	RQ-11 UAV	07				2,191		2,191	U
230	0305233A	RQ-7 UAV	07				12,773		12,773	U
231	0307665A	Biometrics Enabled Intelligence	07				8,573		8,573	U
232	0310349A	Win-T Increment 2 - Initial Networking	07				4,723		4,723	U
233	0708045A	End Item Industrial Preparedness Activities	07				60,877		60,877	U
234	1203142A	SATCOM Ground Environment (SPACE)	07				11,959		11,959	U
235	1208053A	Joint Tactical Ground System	07				10,228		10,228	U
9999	9999999999	Classified Programs					7,154		7,154	U
		Operational Systems Development					1,921,213		1,921,213	
236	0901560A	Continuing Resolution Programs	20				-929,005		-929,005	U
		Undistributed					-929,005		-929,005	
Total Research, Development, Test & Eval, Army				20,700	-20,700		8,636,503	-20,700	8,615,803	

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Department of the Army
 FY 2019 President's Budget
 Exhibit R-1 FY 2019 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

18 Jan 2018

Appropriation: 2040A Research, Development, Test & Eval, Army

Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se
223	0305172A	Combined Advanced Applications	07	1,500		1,500	U
224	0305179A	Integrated Broadcast Service (IBS)	07	450		450	U
225	0305204A	Tactical Unmanned Aerial Vehicles	07	6,000		6,000	U
226	0305206A	Airborne Reconnaissance Systems	07	12,416	14,000	26,416	U
227	0305208A	Distributed Common Ground/Surface Systems	07	38,667		38,667	U
228	0305219A	MQ-1C Gray Eagle UAS	07				U
229	0305232A	RQ-11 UAV	07	6,180		6,180	U
230	0305233A	RQ-7 UAV	07	12,863		12,863	U
231	0307665A	Biometrics Enabled Intelligence	07	4,310	2,214	6,524	U
232	0310349A	Win-T Increment 2 - Initial Networking	07				U
233	0708045A	End Item Industrial Preparedness Activities	07	53,958		53,958	U
234	1203142A	SATCOM Ground Environment (SPACE)	07	12,119		12,119	U
235	1208053A	Joint Tactical Ground System	07	7,400		7,400	U
9999	9999999999	Classified Programs		5,955		5,955	U
		Operational Systems Development		1,922,614	59,741	1,982,355	
236	0901560A	Continuing Resolution Programs	20				U
		Undistributed					
		Total Research, Development, Test & Eval, Army		10,159,379	325,104	10,484,483	

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Army • Budget Estimates FY 2019 • RDT&E Program

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153	06	0604258A	Target Systems Development.....	10
154	06	0604759A	Major T&E Investment.....	19
155	06	0605103A	Rand Arroyo Center.....	38
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157	06	0605326A	Concepts Experimentation Program.....	70
158	06	0605502A	Small Business Innovation Research.....	80
159	06	0605601A	Army Test Ranges and Facilities.....	84
160	06	0605602A	Army Technical Test Instrumentation and Targets.....	92
161	06	0605604A	Survivability/Lethality Analysis.....	99
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Appropriation 2040: Research, Development, Test & Evaluation, Army

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172	06	0605857A	Environmental Quality Technology Mgmt Support.....	205
173	06	0605898A	Management Headquarters (Rsch and Dev).....	212
174	06	0606001A	Military Ground-Based CREW Technology.....	220
175	06	0606002A	Ronald Reagan Ballistic Missile Defense Test Site.....	223
176	06	0606003A	Counter Intel and Human Intel Modernization.....	230
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Army Modeling & Sim X-Cmd Collaboration & Integ	0605718A	168	06.....	134
Army Technical Test Instrumentation and Targets	0605602A	160	06.....	92
Army Test Ranges and Facilities	0605601A	159	06.....	84
Assessments and Evaluations Cyber Vulnerabilities	0606942A	177	06.....	233
Concepts Experimentation Program	0605326A	157	06.....	70
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Army • Budget Estimates FY 2019 • RDT&E Program

Program Element Title	Program Element Number	Line #	BA	Page
Munitions Standardization, Effectiveness and Safety	0605805A	171	06.....	183
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Ronald Reagan Ballistic Missile Defense Test Site	0606002A	175	06.....	223
Small Business Innovation Research	0605502A	158	06.....	80
Support of Operational Testing	0605712A	166	06.....	125
Survivability/Lethality Analysis	0605604A	161	06.....	99
Target Systems Development	0604258A	153	06.....	10
Technical Information Activities	0605803A	170	06.....	161
Threat Simulator Development	0604256A	152	06.....	1

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FY 2019 RDT&E, ARMY PROGRAM ELEMENT
DESCRIPTIVE SUMMARIES

Introduction and Explanation of Contents

1. **General.** The purpose of this document is to provide summary information concerning the Research, Development, Test and Evaluation, Army program. The descriptive summaries are comprised of R-2 (Army RDT&E Budget Item Justification – program element level), R-2A (Army RDT&E Budget Item Justification – project level), R-3 (Army RDT&E Cost Analysis), R-4 (Schedule Profile Detail) and R-5 (Termination Liability Funding for MDAPs) Exhibits, which provide narrative information on all RDT&E program elements and projects through FY 2019.
2. **Relationship of the FY 2019 Budget Submitted to Congress to the FY 2018 Budget Submitted to Congress.** This paragraph provides a list of program elements/projects that are major new starts, restructures, developmental transitions, and terminated programs. Explanations for these changes can be found in the narrative sections of the Program Element R-2A Exhibits.

A. New Start Programs:

<u>Budget Activity</u>	<u>OSDPE / Project</u>	<u>Project Title</u>
02	0602126A / XW8	TRACTOR JACK
02	0602787A / XV5	Medical Capabilities to Support Dispersed Ops
04	0604020A / CF1	CFT Advanced Development & Prototyping
04	0604113A / EX8	Future Tactical Unmanned Aircraft System (FTUAS)
06	0605898A / FJ2	Army SHARP RDTE
06	0606942A / FL2	Cyber Vulnerabilities Assessments and Evaluations
07	0305179A / EF4	Integrated Broadcast System
07	0305206A / EH7	Guardrail Common Sensor (GRCS) Payloads (MIP)
07	0305206A / EH2	EMARSS ADV DEV (MIP)

B. Program Element/Project Restructures:

Budget Activity	Old OSDPE / Project: Title	New OSDPE / Project: Title
02	0602105A / H84: Materials	0602105A / XW4: Manufacturing Science
02	0602270A / 906: Tactical Electronic Warfare Applied Research	0602270A / CYB: Applied Offensive Cyber
02	0602782A / 779: Command, Control And Platform Electronics Tech	0602782A / CY2: Applied Defensive Cyber
02	0602782A / H92: Communications Technology	0602782A / CY2: Applied Defensive Cyber
02	0602786A / 283: Airdrop Adv Tech	0602786A / XW5: Small Unit Expeditionary Maneuver Technology
02	0602786A / H99: Joint Service Combat Feeding Technology	0602786A / XW5: Small Unit Expeditionary Maneuver Technology
02	0602786A / VT4: Expeditionary Mobile Base Camp Technology	0602786A / XW5: Small Unit Expeditionary Maneuver Technology
03	0603001A / C07: Joint Service Combat Feeding Tech Demo	0603001A / XW6: Small Unit Expeditionary Maneuver
03	0603001A / VT5: Expeditionary Mobile Base Camp Demonstration	0603001A / XW6: Small Unit Expeditionary Maneuver
03	0603001A / 242: Airdrop Equipment	0603001A / XW6: Small Unit Expeditionary Maneuver
03	0603270A / K15: Advanced Comm Ecm Demo	0603270A / CY3: Offensive Cyber Demonstration
03	0603270A / K16: Non-Commo Ecm Tech Dem	0603270A / CY3: Offensive Cyber Demonstration
04	0603639A / EL7: Reduced Range Ammunition	0604802A / EP3: Reduced Range Ammunition - Small Caliber
04	0603639A / EL8: LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER	0607131A / ER6: Direct Fire Technology
04	0603639A / EU1: Enhanced Lethality Cannon Munitions	0604802A / EU7: Enhanced Lethality Cannon Munitions
04	0603639A / EU1: Enhanced Lethality Cannon Munitions	0604802A / EU6: 155mm HE Rocket Assist Project Extended Range
04	0604120A / ED5: Assured Positioning, Navigation and Timing (PNT)	1206120A / FJ8: Assured Positioning, Navigation and Timing (PNT)
04	0604120A / EH8: DISMOUNTED	1206120A / FJ9: Dismounted A-PNT
04	0604120A / EH9: PSEUDOLITES	1206120A / FK1: Pseudolites
04	0604120A / EJ2: MOUNTED	1206120A / FK2: Mounted A-PNT
04	0604120A / EJ3: ANTI-JAM ANTENNA	1206120A / FK3: Anti-Jam Antenna
05	0210609A / ED8: Paladin Integrated Management (PIM)	0203743A / FF9: PIM Improvement Program
05	0604798A / FG7: Emerging Technology Initiatives	0604798A / FI3: Rapid Capability Development and Maturation
05	0604827A / S65: Platoon Power Generator	0604827A / EY3: Soldier Power Generator
05	0605053A / FB4: Common Robotic Systems	0605053A / FG8: Common Robotic Controller
07	0303028A / FG2: Counterintelligence & Human Intel Modernization	0606003A / FI9: Counterl Intel and Human Intel Modernization
07	0205402A / EF2: Integrated Base Defense	0605029A / EQ2: IntegGrdSecSurvRespC(IGSSR-C)
07	0205402A / EF2: Integrated Base Defense	0605033A / EQ3: Grnd-Based Opnl Surv Sys -Exped (GBOSS-E)
07	0303142A / 253: Dscs-Dcs (Phase II)	1203142A / FE1: Dscs-Dcs (Phase II)
07	0303142A / 456: MILSATCOM System Engineering	1203142A / FE2: MILSATCOM System Engineering
07	0303142A / EK8: Enroute Mission Command	1203142A / FE4: Enroute Mission Command

C. Program Terminations:

<u>Budget Activity</u>	<u>OSDPE / Project</u>	<u>OSDPE Title / Project Title</u>
01	0601103A / V72	University Research Initiatives / Minerva; project ends
01	0601104A / H50	University and Industry Research Centers / Network Sciences Cta; project ends
01	0601104A / H53	University and Industry Research Centers / Army High Performance Computing Research Center; project ends
01	0601104A / H54	University and Industry Research Centers / Micro-Autonomous Systems Technology (MAST) CTA; project ends
02	0602105A / H7G	Materials Technology / Nanomaterials Applied Research; project ends
02	0602120A / SA2	Sensors and Electronic Survivability / Biotechnology Applied Research; project ends
02	0602705A / H17	Electronics and Electronic Devices / Flexible Display Center; project ends
02	0602720A / 895	Environmental Quality Technology / Pollution Prevention; project ends
03	0603001A / 543	Warfighter Advanced Technology / Ammunition Logistics; project ends
03	0603015A / S28	Next Generation Training & Simulation Systems / Immersive Learning Environments; project ends
03	0603020A / DB1	TRACTOR ROSE / DDB1; project ends
03	0603606A / 683	Landmine Warfare and Barrier Advanced Technology / Area Denial Sensors; project ends
03	0603728A / 025	Environmental Quality Technology Demonstrations / Pollution Prevention Technology; project ends
04	0604115A / EX3	Technology Maturation Initiatives / Ground Vehicle Prototyping; project ends
05	0604290A / DW1	Mid-tier Networking Vehicular Radio (MNVR) / Mid-Tier Wideband Networking Vehicular Radio Mnv; project ends
05	0604321A / B41	All Source Analysis System / CI/HUMINT Software Products (MIP); project ends
05	0604321A / B51	All Source Analysis System / Machine - Foreign Language Translation System; project ends
05	0604818A / 334	Army Tactical Command & Control Hardware & Software / Common Software; project ends
06	0303260A / FA9	Defense Military Deception Initiative / Security Initiatives; project ends
06	0604759A / FA4	Major T&E Investment / Warrior Injury Assessment Manikin (WIAMan); transitions to procurement
07	0202429A / EP8	Aerostat Joint Project - COCOM Exercise / COCOM Exercise; project ends
07	0203740A / 484	Maneuver Control System / Maneuver Control System; project ends
07	0303142A / EA3	SATCOM Ground Environment (SPACE) / Transportable Tactical Cmd Comms (T2C2); transitions to procurement
07	0303150A / EA5	WWMCCS/Global Command and Control System / Strategic and Joint Mission Command; transitions to procurement
07	0305219A / MQ1	MQ-1 Gray Eagle UAV / MQ-1 Gray Eagle - Army UAV (MIP); project ends
07	0607140A / ES7	Emerging Technologies from NIE / Emerging Technologies from NIE; project ends
07	0607141A / DY1	Logistics Automation / Logistics Information Warehouse (LIW); project ends

3. **Classification:** This document contains no classified data. Appropriately cleared individuals can obtain further information on Classified/Special Access Programs by contacting the Department of the Army (ASA(ALT)) Special Programs Office.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>	PE 0604256A / <i>Threat Simulator Development</i>											
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	28.883	22.862	12.835	-	12.835	15.284	15.544	16.014	16.403	0.000	127.825
976: <i>Army Threat Sim (ATS)</i>	-	28.883	22.862	12.835	-	12.835	15.284	15.544	16.014	16.403	0.000	127.825

A. Mission Description and Budget Item Justification

This Program Element (PE) supports the design, development, acquisition, integration and fielding of realistic mobile threat simulators and realistic threat simulation products utilized in Army training and developmental and operational tests. This PE originally funded simulators representing Soviet equipment, but scope was expanded to address emerging world threats. Army Threat Simulator and Threat Simulation products are utilized to populate test battlefields for United States (U.S.) Army Test and Evaluation Command (ATEC), to conduct developmental and operational tests, and to support Program Executive Office (PEO) required user testing in System Integration Laboratories and hardware/simulation in-the-loop facilities. These battlefield simulators represent adversary systems (e.g. missile systems, command, control and communications systems, electronic warfare systems, etc.) in order to portray a realistic threat environment during testing of U.S. weapon systems.

Army Threat Simulator and Threat Simulation products developed or fielded under this PE support Army-wide, non-system-specific threat product requirements. Each capability is pursued in concert and coordination with existing Army and tri-service capabilities to eliminate duplication of effort. Simulator development is responsive to Office of the Secretary of Defense and Government Accountability Office guidance for the Army to conduct operational testing in a realistic threat environment. Actual threat equipment is acquired when appropriate (in lieu of development) and total package fielding is still required (i.e., instrumentation, operations and maintenance, manuals, new equipment training, etc.). Threat simulator development is accomplished under the auspices of the Project Manager for Instrumentation, Targets and Threat Simulators (PM ITTS) and the Director, Operational Test and Evaluation (DOT&E) Threat Simulator Investment Working Group.

Beginning in Fiscal Year 2019, this PE will also support the Advanced Electronic Support Sensor Suite (AESSS) and Cyber Blue Teams activities.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	25.675	22.862	23.885	-	23.885
Current President's Budget	28.883	22.862	12.835	-	12.835
Total Adjustments	3.208	0.000	-11.050	-	-11.050
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	4.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.585	-			
• Adjustments to Budget Years	-0.200	-	-11.050	-	-11.050

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army I BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0604256A I Threat Simulator Development			
• FFRDC Transfer		-0.007	-	-	-
Congressional Add Details (\$ in Millions, and Includes General Reductions)				FY 2017	FY 2018
Project: 976: Army Threat Sim (ATS)					
Congressional Add: Congressional Add - Cyber Vulnerabilities				4.000	-
Congressional Add Subtotals for Project: 976				4.000	-
Congressional Add Totals for all Projects				4.000	-
Change Summary Explanation					
Fiscal Year (FY) 2017 includes a Congressional Add of \$4.000 million for cyber vulnerabilities. FY 2019 difference between Previous President's Budget and Current President's Budget reflects a realignment of civilian pay to the Operations and Maintenance, Army (OMA) appropriation. The FY 2019 funding request was also reduced by \$1.612 million to account for the availability of prior year execution balances.					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0604256A / Threat Simulator Development				Project (Number/Name) 976 / Army Threat Sim (ATS)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
976: Army Threat Sim (ATS)	-	28.883	22.862	12.835	-	12.835	15.284	15.544	16.014	16.403	0.000	127.825
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project supports the design, development, acquisition, integration and fielding of realistic mobile threat simulators and realistic threat simulation products utilized in Army training and developmental and operational tests. Army Threat Simulator and Threat Simulation products are utilized to populate test battlefields for United States (U.S.) Army Test and Evaluation Command (ATEC), to conduct developmental and operational tests, and to support Program Executive Office (PEO) required user testing in System Integration Laboratories and hardware/simulation in-the-loop facilities.												
Army Threat Simulator and Threat Simulation products developed or fielded under this Project support Army-wide, non-system-specific threat product requirements. Each capability is pursued in concert and coordination with existing Army and tri-service capabilities to eliminate duplication of effort. These battlefield simulators represent systems (e.g. missile systems, command, control and communications systems, electronic warfare systems, etc.) that are used to portray a realistic threat environment during testing of U.S. weapon systems. Simulator development is responsive to Office of the Secretary of Defense and General Accounting Office guidance for the Army to conduct operational testing in a realistic threat environment. Actual threat equipment is acquired when appropriate (in lieu of development) and total package fielding is still required (i.e., instrumentation, operations and maintenance, manuals, new equipment training, etc.). Threat simulator development is accomplished under the auspices of the Project Manager for Instrumentation, Targets and Threat Simulators (PM ITTS) and the Director, Operational Test and Evaluation, Threat Simulator Investment Working Group.												
Beginning in Fiscal Year (FY) 2019, this Project will also support the Advanced Electronic Support Sensor Suite (AESSS) and Cyber Blue Teams activities.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Network Exploitation Test Tool (NETT).									3.683	3.675	1.552	
Description: Engineering, Manufacturing and Development (EMD) for the NETT as a comprehensive Threat Cyberspace Operations (TCO) tool. Integrates new tools, tactics, and techniques into NETT to portray evolving Threat environments.												
NETT is a comprehensive TCO tool designed for Test and Evaluation (T&E) to portray evolving hostile and malicious Threat effects within the Cyber domain. Program will continue to provide an integrated suite of open-source/open-method exploitation tools to be integrated with robust reporting and instrumentation capabilities. NETT is used by TCO teams to replicate the tactics of state and non-state Threats and is supported by a robust TCO development environment. The Cyber domain will be the most rapidly changing domain in which our systems operate. NETT program will continue research of these capabilities and will use an in-depth process to clean, fix, and integrate required Threat tools, tactics, and techniques that will be needed during T&E. Focus												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604256A / <i>Threat Simulator Development</i>	Project (Number/Name) 976 / <i>Army Threat Sim (ATS)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
areas include: continued Threat integration, instrumentation, distributed collaboration between multiple users, targets and attack visualization, data collection and remote agent development.			
FY 2018 Plans: Continues EMD phase for the NETT. Integrates new tools, tactics, and techniques into NETT to portray evolving Threat environments. Will continue research of these capabilities and will use an in-depth process to clean, fix, and integrate required Threat tools, tactics, and techniques that will be needed during T&E. Focus areas include: continued Threat integration, instrumentation, distributed collaboration between multiple users, targets and attack visualization, data collection and remote agent development.			
FY 2019 Plans: Continue EMD phase for the NETT including the integration of new tools, tactics, and techniques into the NETT to portray evolving Threat environments.			
FY 2018 to FY 2019 Increase/Decrease Statement: Realignment of civilian pay to the O&M, Army appropriation in FY19. Realignment of funds to higher Army priorities.			
Title: Threat Systems Management Office's (TSMO) Threat Operations Description: The Threat Operations program will fund the operation, maintenance, management, and sustainment capability for Threat systems used to portray a realistic threat environment during Army testing and training within the Army's Threat inventory in order to support multiple Army test events including Network Evaluation Integration / Army Warfighting Assessment (NEI / AWA) and anticipated excursion test events for numerous Systems Under Test / Programs of Record (SUT / POR).		3.395	3.627
FY 2018 Plans: Will continue to support multiple Army test events including NIE / AWA and anticipated excursion test events for numerous SUT / POR currently identified through FY18.			
FY 2019 Plans: Will continue to support multiple Army test events including NIE / AWA and anticipated excursion test events for numerous SUT / POR currently identified through FY19.			
FY 2018 to FY 2019 Increase/Decrease Statement: Realignment of civilian pay to the O&M appropriation in FY19.			
Title: Integrated Threat Force (ITF), formerly named Threat Battle Command Center		1.965	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604256A / Threat Simulator Development	Project (Number/Name) 976 / Army Threat Sim (ATS)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Description: EMD phase for the ITF program to complete hardware / software development and Threat systems integration in support of the build-out of the threat force architecture. Full Operational Capability achieved in September 2017.				
Title: Threat Cyberspace Operations (TCO), formerly named Threat Computer Network Operations Team (TCNOT) Description: TCO supports ATEC events by maintaining a team of highly qualified, trained, and certified CNO professionals who execute Cyber operations against systems under test. The TCO program was designated a "Threat CNO Team" under Army Regulation (AR) 380-53 and is accredited as a United States Cyber Command (USCYBERCOM) / National Security Agency (NSA) certified "Red Team". FY 2018 Plans: Funding will support unique training, credentials, and authorizations for organizations such as Army Intelligence and Security Command (INSCOM), Deputy Chief of Staff (DCS) G2, NSA, and industry. FY18 plans include: continued research of intelligence-based TCO Tactics, Techniques, and Procedures (TTP) and Threat portrayal capabilities up to the Nation State level; development of a highly specialized TCO Training program; development, research, and analysis of continually emerging foreign threat capabilities; and data collection capability. FY 2019 Plans: Funding provides for Contractor subject matter expertise within the Cyber Red Team workforce to support critical threat assessments. Beginning in FY19, O&M funds will enable Cyber Red Team Department of the Army Civilian (DAC) subject matter expertise to execute this unique threat intelligence based mission. FY 2018 to FY 2019 Increase/Decrease Statement: Realignment of civilian pay to the O&M appropriation in FY19. Realignment of funds to higher Army priorities.		4.051	5.764	0.565
Title: Threat Cyberspace Operations (TCO) Fidelity Enhancements. formerly named Threat Computer Network Operations (CNO) Fidelity Enhancements Description: Establishes high-fidelity Threat malware and real-world tools, tactics, techniques, and procedures of Threat employment of TCO using commercial Information Technologies (IT) intended to engage complex U.S. operations. Threat packages range from "technological nomads" operating autonomously to state level forces using both active and passive network attack to selectively degrade or disrupt Army C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance) and Enterprise Business Systems. FY 2018 Plans:		1.333	1.402	0.762

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604256A / Threat Simulator Development	Project (Number/Name) 976 / Army Threat Sim (ATS)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Program will continue in FY18 to validate high-fidelity Threat malware and real-world tools, tactics, techniques, and procedures of Threat employment of CNO using commercial IT technologies intended to engage complex U.S. operations. Will continue to develop state and non-state threat targeting packages that are "current", accurately profiling attack trends and timelines, intent, levels of sophistication, and threat training. These Threat packages range from "technological nomads" operating autonomously to state level forces using both active and passive network attack to selectively degrade or disrupt Army C4ISR and Enterprise Business Systems. FY 2019 Plans: Program will continue the validation of high-fidelity threat malware and real-world tools, tactics, techniques, and procedures of threat TCO employment using commercial IT technologies intended to engage complex U.S. operations. Will continue to develop state and non-state threat targeting packages that are current, accurately profiling attack trends and timelines, intent, levels of sophistication, and threat training. These threat packages represent state and non-state level forces using both active and passive network attack to selectively degrade or disrupt Army C4ISR and Enterprise Business Systems. FY 2018 to FY 2019 Increase/Decrease Statement: Realignment of civilian pay to the O&M appropriation in FY19.				
Title: Advanced Networked Electronic Support Threat Sensors (NESTS) Description: Program will begin prototype design and implementation to deliver advanced threat Electronic Support (ES) platforms. The Advanced NESTS program aims to increase existing Threat ES capabilities to match U.S. Intelligence Community performance assessments of real-world Threat capabilities. FY 2018 Plans: The Advanced NESTS program will continue to increase existing threat ES capabilities to match U.S. Intelligence Community performance assessments of real-world threat capabilities. This program seeks to replicate emerging real-world threat capabilities targeting advanced U.S. communication systems operating up to 18GHz. Program will continue the detailed design and the integration effort in pursuit of FOC during FY18. FY 2018 to FY 2019 Increase/Decrease Statement: System achieves FOC in FY18. Beginning in FY19, this Program will transition to Advanced Electronic Support Sensor Suite (AESSS).		4.109	2.500	-
Title: Advanced Jammer Suite (AJS) Description: The Advanced Jammer Suite will continue to expand the Army's open air and alternatives for Electronic Attack (EA) in a test environment by using variations of jamming to include direct jamming, open air jamming and GPS jamming. It will keep the current jamming Threat as an asset to the Army for use in testing at lower test costs while expanding the Army alternative EA		4.394	3.000	2.079

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604256A / Threat Simulator Development	Project (Number/Name) 976 / Army Threat Sim (ATS)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
in a test environment by using appropriate jamming techniques for the applied testing environment. This program continues Threat representation for the Army in the jamming domain, developing new and future jamming threats, to include satellite jamming.				
FY 2018 Plans: Threat development will include, but is not limited to, techniques such as Frequency Follower Direct Sequence Spread Spectrum (DSSS) threat jamming; Digital Radio Frequency Memory (DRFM) "spoofing," and extended Radio Frequency (RF) range into the Extremely High Frequency (EHF) range.				
FY 2019 Plans: Threat development will include, but is not limited to, techniques such as Frequency Follower Direct Sequence Spread Spectrum (DSSS) threat jamming; Digital Radio Frequency Memory (DRFM) "spoofing," and extended Radio Frequency (RF) range into the Extremely High Frequency (EHF) range.				
FY 2018 to FY 2019 Increase/Decrease Statement: Realignment of civilian pay to the O&M appropriation in FY19.				
Title: Threat Battle Command Force (TBCF), formerly named Integrated Threat Force (ITF) Description: The Threat Battle Command Force (TBCF) incorporates remote operations via distributed Command and Control (C2) while maintaining valid Threat TTP during T&E and training events.		1.953	2.237	2.370
FY 2018 Plans: Integrate the Advanced NESTS system. Continue development of distributed C2 capabilities to support remote test operations. Will incorporate emerging Threat capabilities identified by the Intelligence Community.				
FY 2019 Plans: Integrate the Advanced Jammer Suite and additional Threat systems as identified by Threat assessments. Develop parsing tools to increase situational awareness for the Threat operations commander. Increase remote operations capabilities to decrease test costs.				
FY 2018 to FY 2019 Increase/Decrease Statement: Integration of different threat systems based upon Threat assessments.				
Title: Next Generation Mobile Communication Network Infrastructure Test Range (Next GEN MCNITR) Description: Next Generation MCNITR provides a mobile, scalable closed-loop cellular communications network infrastructure implementing multiple technologies capable of providing a realistic commercial Radio Frequency (RF) signals environment needed for testing and training of U.S. forces in urban and suburban battle space environments. The Next Generation MCNITR		-	0.657	1.266

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604256A / <i>Threat Simulator Development</i>	Project (Number/Name) 976 / <i>Army Threat Sim (ATS)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
program acquires a capability that simulates real-world RF signals environment and that supports representative Threat force reliance of network enabled devices dependent on advanced cellular technology.			
FY 2018 Plans: Conduct risk reduction phase to decompose Threat requirements and system and sub-system functional requirements. Determine most efficient technology insertion schedule.			
FY 2019 Plans: Integrate commercial RF technologies to create a threat faithful communications environment based upon results of the risk reduction phase.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY18 transition from MCNITR to Next GEN MCNITR			
Title: Advanced Electronic Support Sensor Suite (AESSS) Description: AESSS provides expansion of Army's ability to portray acoustic, seismic, and electro-optical / infrared (EO/IR) sensor capabilities.		-	-
FY 2019 Plans: Conduct risk reduction phase to decompose Threat requirements into system and sub-system functional requirements.			
FY 2018 to FY 2019 Increase/Decrease Statement: Beginning in FY19, this Program will transition from Advanced Networked Electronic Support Threat Sensors (NESTS).			
Title: Management and oversight of Cyber Blue Team vulnerability assessments Description: In 2016 the Army Acquisition Executive (AAE) designated PM ITTS as the Office of Primary Responsibility for Acquisition Blue Teams, to provide management and execution of relevant Cyber Blue Team assessment capabilities in support of the acquisition and test communities. Cyber Blue Teams refer to the cyber team which works cooperatively with the system owner to ensure programs can defend against attackers and/or Red Teams. These Cyber Blue Team capabilities are essential to enable military operators to assess and defeat the presence of cyber security threats across Army networks. PM ITTS will also serve as the primary point of contact for cyber-related testing and vulnerabilities assessments with U.S. Cyber Command and Army Cyber. This Project executes the establishment and management of certification standards for Acquisition Blue Teams and coordination of Blue Team requirements on behalf of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA ALT).		-	-
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604256A / <i>Threat Simulator Development</i>	Project (Number/Name) 976 / <i>Army Threat Sim (ATS)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
This activity will establish and manage certification standards for Cyber Blue Teams in coordination with all Project Managers on behalf of Assistant Secretary of the Army for Acquisition, Logistics, and Technology. It will be the single point of contact with United States Cyber Command (CYBERCOM) for open and closed networks, and will develop and field a central repository for vulnerability assessments. FY 2018 to FY 2019 Increase/Decrease Statement: Cyber Blue Team Activities begin in FY19 for this Program.			
Accomplishments/Planned Programs Subtotals		24.883	22.862
		FY 2017	FY 2018
Congressional Add: Congressional Add - Cyber Vulnerabilities		4.000	-
FY 2017 Accomplishments: N/A			
Congressional Adds Subtotals		4.000	-
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army</i> / BA 6: <i>RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0604258A / <i>Target Systems Development</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	18.518	13.902	12.135	-	12.135	9.344	10.099	9.587	13.462	Continuing	Continuing
238: <i>Aerial Targets</i>	-	13.245	9.963	9.820	-	9.820	7.523	8.573	8.984	10.859	Continuing	Continuing
459: <i>Ground Targets</i>	-	5.273	3.939	2.315	-	2.315	1.821	1.526	0.603	2.603	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element funds aerial and ground target hardware and software development, maintenance, and upgrades. The overall objective is to ensure validation of weapon system accuracy and reliability by developing aerial and ground targets essential for test and evaluation (T&E). These targets are economical and expendable, remotely controlled or stationary, and often destroyed in use. The Army is the Tri-Service lead under the Secretariat Reliance panel for providing rotary wing, mobile ground, towed, and designated targets for T&E. The Army executes development of some service-peculiar target requirements in support of quality assurance, lot acceptance, and training and continues development of service-peculiar and on-going target materiel upgrades to maintain continuity with current weapons technology and trends in modern and evolving Army weapons.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	19.122	13.902	12.508	-	12.508
Current President's Budget	18.518	13.902	12.135	-	12.135
Total Adjustments	-0.604	0.000	-0.373	-	-0.373
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.596	-			
• Adjustments to Budget Years	-	-	-0.373	-	-0.373
• FFRDC Transfer	-0.008	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0604258A / Target Systems Development				Project (Number/Name) 238 / Aerial Targets			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
238: Aerial Targets	-	13.245	9.963	9.820	-	9.820	7.523	8.573	8.984	10.859	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Aerial Targets Project supports Army readiness through development, acquisition, operation and modernization of aerial targets. Multi-spectral Aerial Targets include realistic surrogates, actual high performance threat aircraft, and virtual target computer models. Current and emerging weapons systems require test, evaluation, and training using threat representative aerial targets to assess weapons systems effectiveness in the operational environment. This program encompasses a portfolio of full-scale, miniature, and subscale fixed wing/rotary wing targets, virtual targets, ancillary devices, and associated control systems. For accurate threat portrayal that properly stresses weapons systems during test and evaluation aerial targets must exhibit the flight characteristics, threat signatures, and other performance factors to represent or emulate relevant and validated threats. This Project resources the long-range planning to determine future target needs and development of coordinated requirements; the management of target research, development, test and evaluation, production, and modernization; execution of the validation process to ensure that aerial targets accurately represent the threat; as well as storage and repair parts. The Army is the Test Enterprise Reliance lead for Rotary Wing Targets and Towed Target development and the Tri-Service lead for procurement and enhancement of the MQM-107 fixed wing High Speed Aerial Target.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Target Control Systems (TCS) and aerial target control.									0.674	-	-	
Description: Engineering and Manufacturing Development (EMD) phase contract activities for TCS and aerial target control components.												
Title: Towed Targets/Ancillary devices.									0.746	0.557	0.272	
Description: Continue EMD phase activities for the Towed Targets/Ancillary devices.												
FY 2018 Plans:												
Continues EMD for Towed Targets/Ancillary devices, to include development, enhancement, maintenance, and storage for aerial targets, towed targets, and ancillary devices as needed. Continued development and testing of Low Cost Towed target systems (Sphere Tow, Reduced Radar Tow Target, and the Glide Tow Target) emulating current threats at a very low cost to Patriot, Indirect Fires Protection Capability (IFPC), United States Army Center for Countermeasures/Office of the Secretary of Defense, and classified customers. Continue signature modification and performance enhancement efforts for these targets. Investigates and tests other cost-saving towed systems (Glide-Tow, Cruise Missile Tow Target, Towed Spheres, and Tow Test Bed) for Air Defense Weapons System customers.												
FY 2019 Plans:												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604258A / <i>Target Systems Development</i>	Project (Number/Name) 238 / <i>Aerial Targets</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Continues EMD for Towed Targets/Ancillary devices, to include development, enhancement, maintenance, and storage for aerial targets, towed targets, and ancillary devices as needed. Continued development and testing of Low Cost Towed target systems (Sphere Tow, Reduced Radar Tow Target, and the Glide Tow Target) emulating current threats at a very low cost to Patriot, Indirect Fires Protection Capability (IFPC), United States Army Center for Countermeasures/Office of the Secretary of Defense, and classified customers. Signature modification and performance enhancement efforts for these targets is ongoing. Investigates and tests other cost-saving towed systems (Glide-Tow, Cruise Missile Tow Target, Towed Spheres, and Tow Test Bed) for Air Defense Weapons System customers.			
FY 2018 to FY 2019 Increase/Decrease Statement: Realignment of civilian pay to the Operations and Maintenance, Army (OMA) appropriation in FY19.			
Title: Aerial Virtual Targets.		1.211	0.791
Description: Continue EMD phase activities for Aerial Virtual Targets.			0.426
FY 2018 Plans: Will continue engineering and manufacturing for Aerial Virtual Targets for evolving Army and Department of Defense (DoD) simulation standards and evolving implementation techniques; focuses on simulation target models of airplanes, helicopters, missiles, unmanned aerial vehicles, and aerial targets in commonly used formats to support visualization, infrared analysis, and radar analysis simulations; will support verification and validation of models, will provide archiving and distribution of simulation target models to simulation developers throughout the Army and DoD Test and Evaluation (T&E) communities. Simulation target models are employed to facilitate simulations for Developmental Testing (DT) and Operational Testing (OT) test planning, test rehearsal, post-test analysis, hardware-in-the-loop testing, and execution of test events that are too costly or difficult to be conducted under actual field conditions. These models will be used by multiple DoD agencies and multiple weapon systems such as Close Combat Weapon System (CCWS), Unmanned Aerial System, Lower Tier Program offices, and Longbow Hellfire.			
FY 2019 Plans: Will continue engineering and manufacturing for Aerial Virtual Targets for evolving Army and DoD simulation standards and evolving implementation techniques; focuses on simulation target models of airplanes, helicopters, missiles, unmanned aerial vehicles, and aerial targets in commonly used formats to support visualization, infrared analysis, and radar analysis simulations; will support verification and validation of models, will provide archiving and distribution of simulation target models to simulation developers throughout the Army and DoD T&E communities. Simulation target models are employed to facilitate simulations for DT and OT test planning, test rehearsal, post-test analysis, hardware-in-the-loop testing, and execution of test events that are too costly or difficult to be conducted under actual field conditions. These models will be used by multiple DoD agencies and multiple weapon systems such as, but not limited to CCWS, Unmanned Aerial System, Lower Tier Program offices, and Longbow Hellfire.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604258A / <i>Target Systems Development</i>	Project (Number/Name) 238 / <i>Aerial Targets</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Realignment of civilian pay to the Operations and Maintenance, Army (OMA) appropriation in FY19.				
Title: Army Ground Aerial Target Control System (AGATCS). Description: EMD phase activities for the AGATCS in support of a modern current technology target control system for control of both aerial and ground targets. FY 2018 Plans: Will continue AGATCS engineering, manufacturing and development to provide remote control of aerial (both fixed and rotary wing), ground (heavy, medium, and light vehicles), and seaborne targets with a single control system in support of live fire testing necessary for lethality evaluation and sensor package testing for evaluation of suitability and effectiveness. Complies with DoD Instruction (DODI) 8510.01 mandate / DOD Risk Management Framework on all target control systems to ensure a secure operating posture. Meets surface target testing requirements to include formation, collision avoidance, and swarming capabilities for United States (U.S.) Army test ranges. Develops and maintains a small fleet of seaborne and rotary unmanned helicopter vehicle target (UHV-T) assets for use by the Test & Evaluation community. Provides Test Centers and the T&E community with a versatile seaborne and rotary wing resource for use in conducting tests to include live fire testing, observation, signal repeater and cargo transportation. Acquires Service Target Instrumentation (STI) to support all test ranges critical to Army Test and Evaluation Command's (ATEC's) requirement for threat representative surface targets. FY 2019 Plans: AGATCS engineering and manufacturing to provide remote control of aerial (both fixed and rotary wing), ground (heavy, medium, and light vehicles), and seaborne targets with a single control system in support of live fire testing necessary for lethality evaluation and sensor package testing for evaluation of suitability and effectiveness. Complies with DODI 8510.01 mandate / DOD Risk Management Framework on all target control systems to ensure a secure operating posture. Meets surface target testing requirements to include formation, collision avoidance, and swarming capabilities for U.S. Army test ranges. Provides Test Centers and the T&E community with a versatile seaborne and rotary wing resource for use in conducting tests to include live fire testing, observation, signal repeater and cargo transportation. FY 2018 to FY 2019 Increase/Decrease Statement: Realignment of civilian pay to the Operations and Maintenance, Army (OMA) appropriation in FY19.		7.614	2.893	1.673
Title: Unmanned Aerial System - Target (UAS-T). Description: Technical updates and life cycle management activities for the UAS-T to provide Threat representative support for test and experimentation missions. FY 2018 Plans:		0.597	0.361	0.253

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0604258A / <i>Target Systems Development</i>		Project (Number/Name) 238 / <i>Aerial Targets</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Will continue technical and life cycle management for the UAS-T to operate and maintain a generic, tactical class unmanned aircraft system target to support a variety of test requirements by providing a generic threat representative aerial target to support test and experimentation missions. Projects to be supported include the Space and Missile Defense Command High Energy Laser Project, the Joint Integrated Air and Missile Defense Organization (JIAMDO) sponsored Black Dart 2018, Littoral Combat Ship operational and live fire testing. This activity will continue to require technical support for investigation, demonstration, and integration of a more economical target, to include technical oversight of the targets' acquisition and ground support equipment. FY 2019 Plans: Technical and life cycle management for the UAS-T to operate and maintain a generic, tactical class unmanned aircraft system target to support a variety of test requirements by providing a generic threat representative aerial target to support test and experimentation missions. Projects to be supported include the Space and Missile Defense Command and the JIAMDO live fire testing. This activity will continue to require technical support for investigation, demonstration, and integration of a more economical target, to include technical oversight of the targets' acquisition and ground support equipment. FY 2018 to FY 2019 Increase/Decrease Statement: Realignment of civilian pay to the Operations and Maintenance, Army (OMA) appropriation in FY19.					
Title: High Speed Aerial Target (HSAT). Description: EMD phase for the replacement of aging HSAT, MQM-107 to provide a realistic aerial target capable of simulating the performance of enemy aircraft; technical and life cycle management activities for equipment, to include engineering change proposals, technology obsolescence, and safety and system data documentation for the HSAT Target. Program requires technical support for investigation, demonstration, and integration of a more economical target. Technical oversight of the replacement targets' acquisition along with Ground Support Equipment (GSE) and other activities related to getting it operational is essential; provides a realistic aerial target capable of simulating the performance of enemy aircraft to aid in the research, development, test, and evaluation of weapons systems and aid in training operational units employing production missile systems. FY 2018 Plans: Funds EMD phase for replacement of mission-essential HSAT system that will be cost effective and meet capabilities currently supported by the MQM-107. Continue life cycle management for the aging HSAT MQM-107. Targets will continue to support T&E programs such as Patriot, Stinger, Integrated Air and Missile Defense (IAMD), Sentinel Radar, Cruise Missile Defense system (CMDS) and classified programs for Army and Tri-Service customers. FY 2019 Plans: Funds EMD phase for replacement of mission-essential HSAT system that will be cost effective and meet capabilities currently supported by the MQM-107. Will continue life cycle management for the aging HSAT MQM-107. Targets will continue to			2.403	5.361	7.196

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604258A / <i>Target Systems Development</i>	Project (Number/Name) 238 / <i>Aerial Targets</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
support T&E programs such as Patriot, Stinger, IAMD, Sentinel Radar, CMDS and classified programs for Army and Tri-Service customers.				
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Increased developmental effort for replacement of MQM-107 target.				
Accomplishments/Planned Programs Subtotals		13.245	9.963	9.820
C. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
D. Acquisition Strategy N/A				
E. Performance Metrics N/A				

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0604258A / Target Systems Development				Project (Number/Name) 459 / Ground Targets			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
459: Ground Targets	-	5.273	3.939	2.315	-	2.315	1.821	1.526	0.603	2.603	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project funds Army efforts to support test and evaluation (T&E) of advanced weapon systems and supports Army Transformation by developing surrogates, acquiring foreign equipment and developing virtual target computer models of ground vehicle targets. These products are required to adequately stress weapon systems undergoing T&E. This tasking includes long-range planning to determine future target needs and development of coordinated requirement documents; the centralized management of the ground target research, development, test and evaluation processes; execution of the validation process; acquisition of foreign equipment; and continuing maintenance, storage, and development/enhancement/update via engineering services of developed and acquired targets to ensure availability for T&E customers. This Project also manages use of current assets and operates a centralized spare parts program. The U.S. Army is the Tri-Service lead for providing mobile ground targets for T&E.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Mobile Ground Target Operations (MGTO)									2.302	2.216	1.257	
Description: MGTO provides oversight of five Primary Operating Centers to include operation, storage, maintenance, repair, safety and configuration management.												
FY 2018 Plans: Will maintain a fleet of reusable ground targets emulating relevant, current, and emerging threats which provides cost effective solutions for T&E. The objective of the MGTO effort is to support the testing community as fully, efficiently and effectively as possible. The MGTO centrally manages a fleet of foreign threat ground vehicles while maintaining the foreign integrity of the assets. The MGTO will provide support and oversight for actual threat foreign ground vehicles and mobile ground target surrogate vehicles for use as threat targets by the T&E community for destructive and non-destructive scenarios. Efforts will support users such as Army Test and Evaluation Command (ATEC), Apache 64E, Guided Multiple Launch Rocket System (GMLRS), Brigade Modernization Command, Joint Air to Ground Missile (JAGM), Gray Eagle, and Future fighting Vehicle (FFV).												
FY 2019 Plans: Will maintain a fleet of reusable ground targets emulating relevant, current, and emerging threats which provides cost effective solutions for T&E. The objective of the MGTO effort is to support the testing community as fully, efficiently and effectively as possible. The MGTO centrally manages a fleet of foreign threat ground vehicles while maintaining the foreign integrity of the assets. The MGTO will provide support and oversight for actual threat foreign ground vehicles and mobile ground target surrogate												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604258A / Target Systems Development	Project (Number/Name) 459 / Ground Targets		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
vehicles for use as threat targets by the T&E community for destructive and non-destructive scenarios. Efforts will support users such as, but not limited to ATEC, Apache 64E, GMLRS, Brigade Modernization Command, JAGM, Gray Eagle, and FFV.				
FY 2018 to FY 2019 Increase/Decrease Statement: Realignment of civilian pay to the Operations and Maintenance, Army (OMA) appropriation in FY19.				
Title: Mobile Ground Targets Hardware (MGTH) Description: MGTH provides a mix of actual threat assets and surrogate targets to support Army T&E events. FY 2018 Plans: Will continue to provide an optimized mix of varying fidelity ground targets to cost-effectively meet the functionality and signature fidelity requirements of the objective force. Will continue to initiate analysis and design efforts to address specific capability shortfalls and the ability to develop surrogates. The development of air defense artillery (ADA) surrogates are critical to meet the current emerging threat. The acquisition and development of insurgent vehicles is also an essential capability required to defeat emerging threat forces from particular regions. FY 2019 Plans: Will continue to provide ground targets to meet the functionality and signature fidelity requirements of the objective force. Will continue to initiate analysis and design efforts to address specific capability shortfalls and the ability to develop surrogates. The acquisition and development of insurgent vehicles is an essential capability required to defeat emerging threat forces from particular regions. FY 2018 to FY 2019 Increase/Decrease Statement: Realignment of civilian pay to the Operations and Maintenance, Army (OMA) appropriation in FY19.		2.005	0.892	0.682
Title: Ground Virtual Targets Description: Government System T&E to support the research and development of Ground Virtual Targets. FY 2018 Plans: Will continue Government System T&E for evolving Army and DoD simulation standards and implementation techniques for Ground Virtual Targets. The focus is on simulation target models of wheeled and tracked ground vehicles in commonly used model formats; will continue to develop simulation target models visualization simulations, infrared analysis simulations, and radio frequency analysis simulations. Will support verification and validation of models, and provides archiving and distribution of simulation target models to simulation developers throughout the Army and DoD T&E communities. Simulation target models will continue to be employed to facilitate simulations for both developmental and operational testing; Virtual Targets support test planning, test rehearsal, post-test analysis, hardware-in-the-loop testing, and execution of test events that are too costly or difficult		0.966	0.831	0.376

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604258A / <i>Target Systems Development</i>	Project (Number/Name) 459 / <i>Ground Targets</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
to be conducted under actual field conditions. These models will continue to be used by multiple DoD agencies and multiple weapon systems such as the JAGM and Longbow Hellfire offices. <i>FY 2019 Plans:</i> Will support verification and validation of models, and provides archiving and distribution of simulation target models to simulation developers throughout the Army and DoD T&E communities. Simulation target models will continue to be employed to facilitate simulations for both developmental and operational testing; Virtual Targets support test planning, test rehearsal, post-test analysis, hardware-in-the-loop testing, and execution of test events that are too costly or difficult to be conducted under actual field conditions. These models will continue to be used by multiple DoD agencies and Army weapon systems. <i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Realignment of civilian pay to the Operations and Maintenance, Army (OMA) appropriation in FY19.			
Accomplishments/Planned Programs Subtotals		5.273	3.939
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0604759A / <i>Major T&E Investment</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	93.668	102.901	82.996	-	82.996	104.789	76.867	79.231	80.469	Continuing	Continuing
983: <i>Reagan Test Site (RTS) T&E Investments</i>	-	6.762	7.213	7.312	-	7.312	7.346	7.534	7.757	7.902	Continuing	Continuing
984: <i>Major Developmental Testing Instrumentation</i>	-	42.641	29.692	25.257	-	25.257	35.396	36.135	37.285	43.227	Continuing	Continuing
986: <i>Major Operational Test Instrumentation</i>	-	17.311	18.990	12.845	-	12.845	14.628	14.832	15.288	15.508	Continuing	Continuing
EY9: <i>Range Radar Replacement Program (RRRP)</i>	-	25.320	42.006	23.148	-	23.148	47.419	18.366	18.901	13.832	Continuing	Continuing
FA4: <i>Warrior Injury Assessment Manikin (WIAMan)</i>	-	1.634	5.000	14.434	-	14.434	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) funds the development and acquisition of major developmental test instrumentation for the United States (U.S.) Army Test and Evaluation Command's (ATEC) test activities: White Sands Test Center (WSTC), NM; Yuma Test Center, (YTC), AZ; Aberdeen Test Center (ATC), MD; Electronic Proving Ground (EPG), AZ; Redstone Test Center (RTC), AL; and for the Reagan Test Site (RTS) at the U.S. Army Kwajalein Atoll (USAKA), which is managed by the Space and Missile Defense Command. This PE also funds development and acquisition of Operational Test Command's (OTC) major field instrumentation and the management of the Cyber Acquisition Blue Team program and certification standards. Requirements for instrumentation and cyber certifications are identified through a long range survey of project managers, Research Development and Engineering Centers (RDECs), and Battle Laboratories developing future weapon systems and the test programs that support these systems. Army testing facilities are also surveyed to determine major testing capability shortfalls.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		PE 0604759A / Major T&E Investment			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	84.777	102.901	108.632	-	108.632
Current President's Budget	93.668	102.901	82.996	-	82.996
Total Adjustments	8.891	0.000	-25.636	-	-25.636
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	12.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.070	-			
• Adjustments to Budget Years	-	-	-25.636	-	-25.636
• FFRDC Transfer	-0.039	-	-	-	-
Congressional Add Details (\$ in Millions, and Includes General Reductions)					
Project: 984: Major Developmental Testing Instrumentation					
Congressional Add: Congressional Add for Cyber Vulnerabilities Research					
Congressional Add Subtotals for Project: 984					
Congressional Add Totals for all Projects					
Change Summary Explanation					
Fiscal Year (FY) 2017 funding includes a \$12 million Congressional Add for "Cyber Vulnerabilities Research." The FY 2019 funding request was reduced by \$24.039 million to account for the availability of prior year execution balances.					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment				Project (Number/Name) 983 / Reagan Test Site (RTS) T&E Investments			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
983: Reagan Test Site (RTS) T&E Investments	-	6.762	7.213	7.312	-	7.312	7.346	7.534	7.757	7.902	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds improvement and modernization (I&M) for the Ronald Reagan Ballistic Missile Defense Test Site (RTS). Funds modernization of the radar, telemetry, optics, range safety, communications, command/control and other equipment essential to meet test and evaluation requirements of the Services and Department of Defense (DoD) agencies. Without modernization these instrumentation systems face obsolescence or degraded capability. The RTS instrumentation is required to support data collection for test & evaluation assessments and operational decisions for the Army, Navy, Air Force, United States Strategic Command (STRATCOM), Missile Defense Agency (MDA), Defense Advanced Research Projects Agency (DARPA), National Aeronautics and Space Administration (NASA), and other customers. RTS, located in the Republic of the Marshall Islands, is a remote, secure activity of the Major Range and Test Facility Base (MRTFB).

Funding will enable RTS to continue to meet customer objectives and sustain the required instrumentation suite.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Radar Open Systems Architecture (ROSA) Refresh Description: The ROSA Refresh plan is to incorporate subsystem technologies into the Ground-Based Radar Prototype (GBR-P), then transition those technologies to the other RTS sensors. Much of the testing and integration lessons will be learned ahead of time, providing a drop-in updated solution for legacy ROSA components at the other radars identified as having long-term sustainability issues. In this approach, the ROSA refresh effort is coupled with the GBR-P modernization leading to a cleaner and more cost-effective program. FY 2018 Plans: Integrate and test new ROSA sub-systems at GBR-K radar. FY 2018 to FY 2019 Increase/Decrease Statement: FY18 completes current refresh cycle. Program will resume in out years.	0.600	0.900	-
Title: Radar Reliability Improvement Program (RRI). Description: The Radar Improvement and Sustainment (RIS) activity is an Improvements and Modernizations (I&M) Umbrella Program to push technology into radar systems. RIS is a group of complimentary I&M Projects that mitigate annual Operations and Maintenance (O&M) risks. Projects initiated address the following needs: Enhancing the Reliability of the Sensor; Technology	0.300	0.300	0.500

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment	Project (Number/Name) 983 / Reagan Test Site (RTS) T&E Investments		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Refresh; Obsolescence; Commonality of Design across Sensors; Enhanced Monitoring; Fault Detection ? Fault Isolation (FD/FI); Enable Remote Operation and Monitoring; and Enhanced Capabilities.				
FY 2018 Plans: Initiate new efforts to address O&M concerns and increase radar reliability.				
FY 2019 Plans: RRI Program will continue as an I&M umbrella Program to push technology into the radar systems. RRI projects will address: Enhancing the Reliability of the Sensor; Technology Refresh; Obsolescence; Commonality of Design across Sensors; Enhanced Monitoring; FD/FI; Enable Remote Operation and Monitoring; and Enhanced Capabilities.				
FY 2018 to FY 2019 Increase/Decrease Statement: This is an umbrella I&M program that varies according to fund availability.				
Title: Telemetry (TM) Modernization Study.		2.310	2.427	2.480
Description: This activity will develop the technology required to modernize the telemetry systems using an innovative software defined radio approach designed to vastly improve the ability to adapt to future telemetry changes and requirements quickly with lower cost. In addition, this approach will enable centralized command and control of the telemetry equipment increasing efficiency in mission preparation and execution. The telemetry backend processing chain is currently comprised of discrete frequency-specific hardware components that are replicated for each telemetry channel required for a test event. This activity will develop a scalable frequency-agnostic, software-based solution that runs on commodity computer servers. More complex missions (e.g., Over-the-air (OTA) operational testing of the Ballistic Missile Defense Systems (BMDS)) will continue to require more telemetry channels, but this activity will avoid much of that future cost. This effort will provide enough hardware to increase capacity of the telemetry system.				
FY 2018 Plans: Extend implementation to additional antenna sites at RTS.				
FY 2019 Plans: Complete Roi Island modernized TM equipment. Reach Initial Operating Capability for a single telemetry site.				
FY 2018 to FY 2019 Increase/Decrease Statement: Increase due to inflation				
Title: Legacy Servo Upgrade Program.		0.272	-	1.460

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment		Project (Number/Name) 983 / Reagan Test Site (RTS) T&E Investments	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Description: This activity will design, upgrade, and replace the radar and optics servo systems. The custom-hardware based legacy systems will be replaced with commercially supportable commercial off the shelf (COTS) hardware. Where possible, common components will be used across all range sensors to minimize ongoing maintenance costs. FY 2019 Plans: Assess condition of remaining antenna servo systems and determine highest priority servo replacement need and initiate engineering design activities for the next phase of the program. FY 2018 to FY 2019 Increase/Decrease Statement: This is not a new start but continuation of a long term servo upgrade program. Phase 2 completed in FY17 and Phase 3 begins in FY19 based on funding availability.					
Title: RTS Automation and Decision Support. Description: As missions become more complex and challenging, operator workload increases significantly. This activity improves automation and decision support to reduce human operator workload and operator errors associated with a higher workload. There will be additional capabilities to operate the range as a cohesive meta-sensor with capabilities to program contingencies, react with a priori information and decision algorithms and resource brokers. This will improve mission assurance. The RTS radar control software will be upgraded to automate processes that computers do better than humans, and reduce the need for labor intensive tuning efforts. The human computer interface (HCI) for the radars will be improved to allow operators to interact with the RTS sensor suite more intuitively with a small set of high-level commands. The control center data fusion algorithms will be improved and streamlined to reduce complexity and decrease operator workload. FY 2018 Plans: Complete displays and control center automation scoped in FY17. FY 2018 to FY 2019 Increase/Decrease Statement: Program will be completed in FY18.			0.200	0.100	-
Title: Multi-Statics for Radars and Telemetry - Prototype Description: This development will enable all the existing Kiernan Reentry Measurements System (KREMS) radars to be used as illuminators and the RTS telemetry systems to be used as receivers in a multi-static array that will increase the sensitivity of the systems, reduce the need for high power operation in the systems, and in conjunction with the software radio radar project and the solid state transmitter project will allow the radars to be operated at a lower O&M cost. FY 2018 Plans:			0.200	0.486	0.781

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment	Project (Number/Name) 983 / Reagan Test Site (RTS) T&E Investments		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Continue design of a multi-static prototype and procure hardware to support the prototype. FY 2019 Plans: Continue development of multi-statics for KREMS Radars. Conduct initial proof of concept tests. FY 2018 to FY 2019 Increase/Decrease Statement: Funding increased for proof of concept testing of prototype designed in FY17/FY18.				
Title: Ground Based Discrimination Radar Description: The Ground Based Discrimination Radar activity will provide the RTS with an instrumentation-quality, X-band phased array radar to more robustly support customer mission requirements and provide a relatively cost-effective phased array technology test-bed capability. To control costs, the existing GBR-P, provided by the Missile Defense Agency and initially developed as the prototype fire control radar, will be upgraded. FY 2018 Plans: Integrate new sub-systems and backend processing onto the GBR-K radar on Kwajalein. FY 2019 Plans: Continue GBR upgrade external systems and infrastructure work. Begin integration of one super-sub-array. Planned initial connection to the RTS classified mission network. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 funds are for continued overhaul of the GBR and planned initial connection to the RTS classified network.		2.880	3.000	1.600
Title: RTS Cyber Threat Assessment and Mitigation Description: This is new start for FY19. Prototype and integrate a sidelobe canceller (to protect against electronic attack and radar jamming) for ALTAIR Ultra High Frequency (UHF) radar that has compatibility with other KREMs. FY 2019 Plans: System design review planned. Begin system development phase with yard antenna placement and integration. FY 2018 to FY 2019 Increase/Decrease Statement: Emerging need to prototype and integrate a Sidelobe Canceller (SLC) for ALTAIR UHF that has compatibility with other KREMS Radars.		-	-	0.491
Accomplishments/Planned Programs Subtotals		6.762	7.213	7.312

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment	Project (Number/Name) 983 / Reagan Test Site (RTS) T&E Investments
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment				Project (Number/Name) 984 / Major Developmental Testing Instrumentation			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
984: Major Developmental Testing Instrumentation	-	42.641	29.692	25.257	-	25.257	35.396	36.135	37.285	43.227	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project develops and acquires major test instrumentation to perform developmental testing of weapon systems at U. S. Army Test and Evaluation Command's (ATEC) activities which include: Yuma Test Center (YTC), AZ; Aberdeen Test Center (ATC), MD; Electronic Proving Ground (EPG), AZ; White Sands Test Center (WSTC), NM; Redstone Test Center (RTC), AL.

Projects are designated as a major test program based on their visibility, assessed relative technical risk (medium-high), schedule risk, cost (greater than \$1.5 Million per year or \$7.5 Million for the total Project) and applicability to other mission areas or services. These Projects are technically demanding, state-of-the-art, unique instrumentation assets or suites to meet the technology shortfalls, and generally result from development programs managed by a professional project management team. FY19 funds will be used for modernization of outdated instrumentation in support of developmental testing for Army Department of Defense programs.

Electromagnetic Environmental Effects (E3) Electromagnetic Radiation Effects (EMRE) Systems Modernization will upgrade equipment at the White Sands Missile Range (WSMR) EMRE site where E3 testing is performed to evaluate survivability and vulnerability of military systems. This Project will upgrade and replace signal transmitters, refurbish an anechoic test chamber, replace data acquisition equipment and install a new turntable to support test items. Nuclear Effects Test Capabilities Modernization acquires and upgrades Special Test Equipment for nuclear facilities located at WSMR. These acquisitions and upgrades include the Pulse Current Injection Simulator, Prompt Gamma Simulator, Gamma Range Facility, Linear Electron Accelerator (LINAC), Semi-Conductor Test Lab, Electromagnetic Pulse and the Solar Furnace. Common Range Integrated Instrumentation System (CRIIS) Objective Program provides precision location instrumentation which will significantly increase the Test and Evaluation (T&E) ranges' capability to meet the test instrumentation needs of the tri-service range users. Test Network Modernization (TNM) will upgrade existing test data networks to ensure infrastructures are capable of providing reliable and secure transport of data and communications for ATEC test activities. Applied Environments Modernization (AEM) program will upgrade antiquated Environmental labs for climatic and dynamic testing with new cascade refrigeration units, climatic chambers, vibration test systems, x-ray cameras, a real-time radiography system and full spectrum solar lights. Future Wireless Network program (FWN) will procure and integrate wireless network technologies across ATEC test activities which will provide near real-time data collection support for Developmental Test and Operational Test events. Robotics/Unmanned Aerial Systems (UAS) Instrumentation Suite will develop and procure instrumentation for testing controlled and autonomous ground and aerial robotic systems. System of Systems Cooperative Engagement Test Infrastructure (SCETI) will provide for the development of systems to conduct systems-level Manned-Unmanned Teaming (MUM-T) testing for both aircraft and ground systems in a distributed environment.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Electromagnetic Environmental Effects (E3) Systems Modernization (EMRE) project.	5.300	0.769	0.120

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment	Project (Number/Name) 984 / Major Developmental Testing Instrumentation		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Description: EMD phase contract activities for the EMRE project. This effort will upgrade 27 instrumentation test facilities at WSMR. FY 2018 Plans: Continues the EMD phase E3 Systems contract activity. Funds will procure the Electronic and Electromagnetic Interference Test facilities. FY 2019 Plans: Will complete the EMD phase for E3 Systems contract activity. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease due to completion of EMD activities.				
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Nuclear Effects Test Capability Modernization. Description: EMD phase contract activity for the Nuclear Effects Test Capability Modernization. FY 2018 Plans: Continues the EMD phase contract activity for the Nuclear Effects Test Capability Modernization. Funds acquisition and upgrades of Special Test Equipment for Prompt Gamma Simulator facility and Rapid Response Laboratory. FY 2019 Plans: Will continue the EMD phase contract activity for the Nuclear Effects Test Capability Modernization. Funds acquisition and upgrades of Special Test Equipment for Prompt Gamma Simulator facility and Rapid Response Laboratory. FY 2018 to FY 2019 Increase/Decrease Statement: Increased requirement in order to complete additional upgrades for equipment at facilities and laboratories.		9.986	4.835	5.500
Title: Engineering and Manufacturing Development (EMD) phase contract activity of the Test Network Modernization Program. Description: EMD phase contract activity for the Test Network Modernization. This program will provide a modern test infrastructure capable of reliable, secure transport of test data and test communications for all ATEC developmental test ranges. FY 2018 Plans: Continues the EMD phase contract activity for the Test Network Modernization. This program will provide a modern test infrastructure capable of reliable, secure transport of test data and test communications for all ATEC developmental test ranges. Funds will procure and install End of Life network hardware for five Test Centers (Aberdeen, Electronic Proving Grounds, Redstone, White Sands, and Yuma), replacing existing obsolete hardware that no longer meets Risk Management Framework		3.032	12.307	12.669

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment	Project (Number/Name) 984 / Major Developmental Testing Instrumentation		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
(RMF) requirements for operational availability. Includes procurement of a standardized Network Monitoring System across five Test Centers (Aberdeen, Electronic Proving Grounds, Redstone, White Sands, and Yuma) to allow operators the ability to monitor and track network traffic and trouble shoot network failure points. FY 2019 Plans: Will continue the engineering and manufacturing for the Test Network Modernization. This program will provide a modern test infrastructure capable of reliable, secure transport of test data and test communications for all ATEC developmental test ranges. Funds continue the procurement and install of end of life network hardware for five Test Centers (Aberdeen, Electronic Proving Grounds, Redstone, White Sands, and Yuma), replacing obsolete hardware that no longer meets Authority to Operate (ATO) requirements. Funds will continue standardization of Network Monitoring System across five Test Centers (Aberdeen, Electronic Proving Grounds, Redstone, White Sands, and Yuma) to allow operators the ability to monitor and track network traffic and trouble shoot network failure points. FY 2018 to FY 2019 Increase/Decrease Statement: Increase due to additional hardware replacement.				
Title: Engineering and Manufacturing Development (EMD) for the Applied Environments Modernization program. Description: EMD phase contract activity for the Applied Environments Modernization program FY 2018 Plans: Continues EMD phase contract activity for the Applied Environments Modernization program. This program will upgrade antiquated Environmental labs for climatic and dynamic testing with new cascade refrigeration units, climatic chambers, vibration test systems, x-ray cameras, a real-time radiography system and full spectrum solar lights. FY 2019 Plans: Will continue the EMD phase for the Applied Environments Modernization program. Funds will continue to provide upgrades to antiquated Environmental labs for climatic and dynamic testing with new cascade refrigeration units, climatic chambers, vibration test systems, x-ray cameras, a real-time radiography system and full spectrum solar lights. FY 2018 to FY 2019 Increase/Decrease Statement: Department of Army Civilian labor costs moved to the Operations & Maintenance, Army appropriation.		2.061	4.621	3.968
Title: Engineering and Manufacturing Development (EMD) phase contract activity for System of Systems Controlled Environment Test Infrastructure (SCETI) Description: EMD phase for System of Systems Cooperative Engagement Test Infrastructure (SCETI). FY 2018 Plans:		0.973	1.438	3.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment	Project (Number/Name) 984 / Major Developmental Testing Instrumentation		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Continues EMD phase contract activity for the SCETI program. This program will design and develop a test chamber to replicate degraded visual environments for various environmental conditions (i.e. rain, dust, snow, etc.) for helicopters. FY 2019 Plans: Will continue EMD phase contract activity for the SCETI program. This program will deliver the modular airborne sensor capability to test avionic sensors in degraded visual environments such as rain, dust, and snow for helicopters. FY 2018 to FY 2019 Increase/Decrease Statement: Increase due to development of sensors to test avionics.				
Title: Engineering and Manufacturing Development (EMD) phase contract activity for Robotics/UAS Instrumentation Suite Description: EMD phase of Robotics/Unmanned Autonomous System (UAS) Instrumentation Suite for testing controlled and autonomous ground and aerial robotic systems. FY 2018 Plans: Continues EMD phase contract activity for the Robotics/UAS Instrumentation Suite. This program will procure instrumentation to be installed on aerial and ground platforms to collect performance test data. Initial instrumentation acquisition will focus on Global Position System (GPS) tracking and accuracy. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease due to EMD activity completion for phase one. Program will continue in the out years.		3.030	3.247	-
Title: Engineering and Manufacturing Development (EMD) phase contract activity of the Common Range Integrated Instrumentation System (CRIIS) Objective Program. Description: EMD phase contract activities of the CRIIS Objective Program. This is a replacement system for the Advanced Range Data System (ARDS). This system will meet the critical need for measuring the precision location of units under test within the Time-Space domain. It provides a significant increase to the Test & Evaluation ranges' capability to meet the test instrumentation needs of the tri-service range users. The improvements are the data link, TSPI accuracy, miniaturization, standard interfaces, and system encryption of high dynamic instrumentation tracking pods. CRIIS instrumentation upgrades will be delivered to WSMR. FY 2018 Plans: Complete EMD of the CRIIS Objective Program. Funds acquisition of CRIIS Lot 3 support equipment comprised of five Instrumentation Pods, and associated remote ground stations and support equipment. FY 2018 to FY 2019 Increase/Decrease Statement:		3.785	2.475	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment	Project (Number/Name) 984 / Major Developmental Testing Instrumentation	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Effort complete in FY18.			
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Future Wireless Network program. Description: EMD phase contract activity for the Future Wireless Network program.		1.024	-
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Telemetry Systems Modernization program Description: EMD phase contract activity for the Telemetry Systems Modernization program.		1.450	-
Accomplishments/Planned Programs Subtotals		30.641	29.692
		FY 2017	FY 2018
Congressional Add: Congressional Add for Cyber Vulnerabilities Research FY 2017 Accomplishments: N/A		12.000	-
Congressional Adds Subtotals		12.000	-
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment				Project (Number/Name) 986 / Major Operational Test Instrumentation			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
986: Major Operational Test Instrumentation	-	17.311	18.990	12.845	-	12.845	14.628	14.832	15.288	15.508	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds the development, acquisition, and integration of major operational test instrumentation for the U.S. Army Test and Evaluation Command's Operational Test Command and supporting test activities at test and training ranges. Requirements for instrumentation are identified through a long range survey of project managers, Research Development and Engineering Centers (RDECs), and Battle Laboratories developing future weapon systems and the test programs that support these systems. Project focus is to address Director Operational Test and Evaluation (DOT&E)-identified Army test realism shortfalls.

FY19 funds will be used for Follow-On Operational Test and Evaluation (FOT&E) in support of PM Apache, Joint Light Tactical Vehicle (JLTV) and Rifleman Radio.

Projects are designated as a major test program based on their visibility, assessed relative technical risk (medium-high), schedule risk, cost (greater than \$1.5 Million per year or \$7.5 Million for the total project) and applicability to other mission areas or services. These projects are technically demanding, state-of-the-art, unique instrumentation assets or suites to meet the technology shortfalls, and generally result from development programs managed by a professional project management team.

The DOT&E annual report to Congress identified shortfalls in the Army's abilities to create realistic operational environments. The Integrated Live-Virtual-Constructive (LVC) Test Environment (ILTE) project will address multiple shortfalls identified by DOT&E. ILTE is a portfolio of related development efforts that will deliver a system of systems to provide a Real-Time Casualty Assessment (RTCA) and instrumentation suite that delivers a high fidelity, realistic, real-time capability to measure hardware and personnel performance in modern combat environments. ILTE will enable testing under tactical conditions for small and large-scale operations while integrating network operations and effects in support of the Army Equipment Modernization Plan. ILTE also allows the U.S. Army to test all Current-to-Future weapon systems in a realistic operational environment. ILTE will transition Research, Development, Test and Evaluation (RDTE) developed performance enhancements and technology upgrades to the operational test command, control, and communications, communications network, weapons system interfaces, vehicle and dismounted-troop kits and peripherals, Global Positioning System (GPS), encryption components, and integrate operational realistic digital battlefield data collection and analysis tools. These tools will collect, store and analyze data from the digital battlefield. Improvements will enable the ILTE system of systems to measure and record accrued damage, levels of exposure, effects of countermeasures, evasive action, and instrument threat vehicles. This capability is required by the operational test community to integrate digital battlefield data collection and analysis tools into the Network Integration Evaluations (NIEs), M1A2 Abrams, M2A4 Bradley, Stryker, Armored Multi-Purpose Vehicle (AMPV), Apache AH-64E, Gray Eagle and other operational tests.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Integrated Live-Virtual-Constructive (LVC) Test Environment (ILTE) - formerly "Real-Time Casualty Assessment (RTCA)"	17.311	18.990	12.845

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment		Project (Number/Name) 986 / Major Operational Test Instrumentation	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Description: Transition from Technology Maturation and Risk Reduction (TMRR) Phase to Engineering, Manufacturing, and Development Phase and acquisition of ILTE capabilities required to conduct Operational Tests.					
FY 2018 Plans: Transition ILTE activity from TMRR to EMD Phase. Project ramps up to provide capabilities in direct support of Operational Test of the AH-64E, JLTV, and AMPV. Will continue to fund the development of hardware, software, interfaces, and new capabilities to ensure Real-Time Casualty Assessment(RTCA)/ILTE requirements for upcoming operational tests are satisfied. Will fund integration of improved representation of unmanned aerial system in operational test environments. Will continue to develop capability to provide a realistic operational test environment. Funds will continue to be allocated for Real-Time Casualty Assessment (RTCA) instrumentation and simulation systems to be used to support Force-on-Force Operational Tests which support a more comprehensive operational test infrastructure. New development efforts will include integration of classified and unclassified simulations into a common environment. Continued development efforts include, integration with new tactical systems under test, integration with Live, Virtual, and Constructive simulation environments, RTCA capabilities for active protection systems and countermeasures, RTCA capabilities for communications/sensor kills and degradations, development, integration, and testing of mission command effects and degradations, communications upgrade, new communications sub-systems, new encryption and RTCA capabilities for electronic warfare and countermeasures.					
FY 2019 Plans: ILTE continues EMD phase. Project will provide capabilities in direct support of Operational Test of the AH-64E, JLTV, and AMPV. Will continue to fund the development of hardware, software, interfaces, and new capabilities to ensure RTCA / ILTE requirements for upcoming operational tests are satisfied. Will fund integration of improved representation of unmanned aerial system in operational test environments. Will continue to develop capability to provide a realistic operational test environment. Funds will continue to be allocated for RTCA instrumentation and simulation systems to be used to support Force-on-Force Operational Tests which support a more comprehensive operational test infrastructure. New development efforts will include integration of classified and unclassified simulations into a common environment. Continued development efforts include: integration with new tactical systems under test, integration with LVC simulation environments, RTCA capabilities for active protection systems and countermeasures, RTCA capabilities for communications/sensor kills and degradations, development, integration, and testing of mission command effects and degradations, communications upgrade, new communications sub- systems, new encryption and RTCA capabilities for electronic warfare and countermeasures.					
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease due to Department of Army Civilian labor costs moving to the Operations & Maintenance, Army appropriation.					
Accomplishments/Planned Programs Subtotals			17.311	18.990	12.845

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / <i>Major T&E Investment</i>	Project (Number/Name) 986 / <i>Major Operational Test Instrumentation</i>
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment				Project (Number/Name) EY9 / Range Radar Replacement Program (RRRP)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
EY9: Range Radar Replacement Program (RRRP)	-	25.320	42.006	23.148	-	23.148	47.419	18.366	18.901	13.832	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Range Radar Replacement Program (RRRP) develops modern instrumentation radars to replace obsolete tracking and surveillance radars at U.S. Army Test and Evaluation Command's Developmental Test Command (DTC) activities which include: Aberdeen Test Center (ATC), MD; Redstone Test Center (RTC), AL; White Sands Test Center (WSTC), NM; and Yuma Test Center (YTC), AZ. The acquisition of modern instrumentation radar systems will provide the Army critical testing data essential for the development of complex next generation technology and advanced system capabilities. The RRRP provides the test centers with improved radar resolution, sensitivity, accuracy, clutter suppression, and reliability. The planned solution to meet program requirements consists of four primary items: Long Range Single Object Tracking Radars (SOTR), Long Range Multiple Object Tracking Radars (MOTR), Medium Range Radars (MRR), and Short Range Radars (SRR). The resulting system will not only reduce operation and sustainment costs for the ranges, but improve data collection, thus enhancing development of Army systems being tested at these ranges. The current fleet of instrumentation radars located at ATC, RTC, WSTC, and YTC has become antiquated to the extent that they are not able to support the test needs of the test centers.

The Project will procure Commercial-Off-The-Shelf (COTS) and/or Modified Commercial-Off-The-Shelf (MOTS) radars for both the MRR and SRR solutions, and a combination of recapitalization and COTS/MOTS replacement for the FPS-16 Long Range Radars. Also, the program will conduct EMD for upgrading three MPS-39 Long Range MOTRs.

Fiscal Year 2019 funds the procurement and testing of COTS Medium Range Radars as replacement equipment to ATC, RTC, WSTC and YTC.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Engineering and Manufacturing Development (EMD) Phase Contract Activity	25.320	42.006	23.148
Description: EMD phase contracts activities for RRRP.			
FY 2018 Plans: Conduct EMD for the RRRP LRR (MPS-39 Radar Upgrade). Results of the Business Case Analysis (BCA) completed in FY17 have refocused/realigned the program to procure COTS radars for the remaining SRR and MRR systems; COTS for replacement of the remaining FPS-16 Radar system; Recapitalize/Upgrade three MPS-39 Radar systems as replacements of equipment at ATC, RTC, WSTC, and YTC.			
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment	Project (Number/Name) EY9 / Range Radar Replacement Program (RRRP)	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Delivery of recapitalized FPS-16 LRRs and COTs MRRs to YTC and WSTC. Support and conduct factory acceptance and site acceptance testing with vendors and ATEC ranges. Continue EMD for the MPS-39 Long Range MOTRs.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 funding was reduced due to availability of prior year balances. This will eliminate procurement of one COTS LRR and two MRRs previously planned in FY 2019.			
Accomplishments/Planned Programs Subtotals		25.320	42.006
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment				Project (Number/Name) FA4 / Warrior Injury Assessment Manikin (WIAMan)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FA4: Warrior Injury Assessment Manikin (WIAMan)	-	1.634	5.000	14.434	-	14.434	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Warrior Injury Assessment Manikin (WIAMan) Anthropomorphic Test Device (ATD) Project will develop and produce Warrior-representative ATDs that incorporate realistic, biomechanically-validated injury features and assessment tools to better characterize dynamic events and injury risks measured in Live Fire Test & Evaluation (LFT&E) and vehicle development efforts. This capability is comprised of an ATD system built for the Title 10 LFT&E environment and associated biomechanics data and analysis tools. The current manikins do not represent the modern Warrior and were not designed for the vertical acceleration environment associated with underbody blast (UBB) events. Consequently, current LFT&E crew survivability assessment devices are limited in their ability to predict the types and severity of injuries seen in these events. Due to this technology gap, military ground vehicles are being fielded without fully defined levels of injury risk and crew survivability for Under Body Blast (UBB) events. The device produced by this Project will be used to satisfy a critical need for scientifically valid capability for analyzing the risk of injury caused by UBB.

Other Program Funding Summary: Biomechanical research supporting WIAMan is funded by the Defense Health Agency (DHA), R-1 Program Element PE 0603115DHA/Medical Technology Development Project 431A / Underbody Blast Testing (Army) (FY2018, \$8M).

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Warrior Injury Assessment Manikin (WIAMan) Anthropomorphic Test Device (ATD)	1.634	5.000	14.434
Description: The Warrior Injury Assessment Manikin (WIAMan) Anthropomorphic Test Device (ATD) project will provide the Army Test and Evaluation Command and Army Research Laboratory with a Warrior-representative blast test manikin and data acquisition system to assess the risk of injury during underbody blast testing of military ground vehicles.			
Acquisition Strategy: Technology transfer from Research and Development Command (RDECOM). Contract for the Anthropomorphic Test Devices (ATDs) with industry leveraging the technology data package provided by RDECOM.			
FY 2018 Plans: Continues the transition from Research and Development Command (RDECOM) science and technology research to WIAMan ATD prototype refinement to source selection activities and entry into the Engineering and Manufacturing Development (EMD) phase. FY18 funding covers additional costs associated with testing, engineering and procurement of fieldable prototypes.			
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / Major T&E Investment	Project (Number/Name) FA4 / Warrior Injury Assessment Manikin (WIAMan)	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
FY19 funding continues to cover costs associated with testing, engineering, procurement, and delivery of the first ten (10) ATDs, calibration and certification equipment, and verification and validation testing.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY2019 funding covers costs associated with testing, engineering and delivery of the first ten (10) ATDs, procuring certification and calibration equipment, and planning and executing verification and validation testing.			
Accomplishments/Planned Programs Subtotals		1.634	5.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605103A / Rand Arroyo Center											
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	19.863	20.140	19.821	-	19.821	19.913	20.294	20.906	22.032	0.000	142.969
732: Arroyo Center Spt	-	19.863	20.140	19.821	-	19.821	19.913	20.294	20.906	22.032	0.000	142.969

A. Mission Description and Budget Item Justification

This Program Element (PE) funds the RAND Arroyo Center, the Department of the Army's Federally Funded Research and Development Center (FFRDC) for studies and analysis. The Arroyo Center draws its researchers from RAND's staff of nearly 700 professionals trained in a broad range of disciplines. Most staff members work in RAND's principal locations-Santa Monica, California; Arlington, Virginia; and Pittsburgh, Pennsylvania. The RAND Arroyo Center provides for continuing analytical research across a broad spectrum of issues and concerns, grouped in four major research areas: Strategy, Doctrine, and Resources; Military Logistics; Manpower and Training; and Force Development and Technology. The RAND Arroyo Center research agenda is primarily focused on mid/long-term concerns. Results and analytical findings directly affect senior leadership deliberations on major issues. Arroyo Center research is sponsored by the Chief of Staff, Vice Chief, the Deputy Chiefs of Staff of the Army; the Army Assistant Secretaries; and most of the Army's major commands. The Arroyo Center is provided guidance from the Army through the Arroyo Center Policy Committee (ACPC), which is co-chaired by the Vice Chief of Staff of the Army and the Assistant Secretary of the Army (Acquisition, Logistics and Technology). The ACPC reviews, monitors, and approves the annual Arroyo Center research plan. Each project requires General Officer (or Senior Executive Service (SES) equivalent) sponsorship and involvement on a continuing basis. RAND Arroyo provides the Army with a unique multidisciplinary capability for independent analysis.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	20.658	20.140	20.147	-	20.147
Current President's Budget	19.863	20.140	19.821	-	19.821
Total Adjustments	-0.795	0.000	-0.326	-	-0.326
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.785	-			
• FFRDC Transfer	-0.010	-	-	-	-
• CivPay	-	-	-0.326	-	-0.326

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605103A / Rand Arroyo Center				Project (Number/Name) 732 / Arroyo Center Spt			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
732: Arroyo Center Spt	-	19.863	20.140	19.821	-	19.821	19.913	20.294	20.906	22.032	0.000	142.969
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds the RAND Arroyo Center, the Department of the Army's Federally Funded Research and Development Center (FFRDC) for studies and analysis. The Arroyo Center draws its researchers from RAND's staff of nearly 700 professionals trained in a broad range of disciplines. Most staff members work in RAND's principal locations-Santa Monica, California; Arlington, Virginia; and Pittsburgh, Pennsylvania. The RAND Arroyo Center provides for continuing analytical research across a broad spectrum of issues and concerns, grouped in three major research areas: Strategy, Doctrine, and Resources; Forces and Logistics; and Personnel, Training, and Health. The RAND Arroyo Center research agenda is primarily focused on mid/long-term concerns. Results and analytical findings directly affect senior leadership deliberations on major issues. Arroyo Center research is sponsored by the Chief of Staff, Vice Chief, the Deputy Chiefs of Staff of the Army; the Army Assistant Secretaries; and most of the Army's major commands. The Arroyo Center is provided guidance from the Army through the Arroyo Center Policy Committee (ACPC), which is co-chaired by the Vice Chief of Staff of the Army and the Assistant Secretary of the Army (Acquisition, Logistics and Technology). The ACPC reviews, monitors, and approves the annual Arroyo Center research plan. Each project requires General Officer (or Senior Executive Service (SES) equivalent) sponsorship and involvement on a continuing basis. RAND Arroyo provides the Army with a unique multidisciplinary capability for independent analysis.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Research addressing manpower and training	4.899	5.093	-
Description: Addresses key issues for the Army, including recruiting and personnel fill requirements; reserve component readiness; leader development; training (major combat operations and stability operations skills); distance learning, simulation training development and application; training support systems; retention (active command/reserve command); officer career fields, selection, assignment sequencing; and medical forces and operations.			
FY 2018 Plans: The Planned Study program will include numerous key issues for the Army such as recruiting and personnel fill requirements; reserve component readiness; leader development; training (major combat operations and stability operations skills); distance learning, simulation training development and application; training support systems; retention (active command/reserve command); officer career fields, selection, assignment sequencing; and medical forces and operations.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY19 funding represents a continuation of FY18 funding adjusted for civilian pay and inflation rate assumptions. Descriptions of Planned Programs represent a revised categorization of study types, not a termination of ongoing efforts.			
Title: Research addressing force development and technology	4.791	4.979	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605103A / <i>Rand Arroyo Center</i>		Project (Number/Name) 732 / <i>Arroyo Center Spt</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Description: Addresses key issues for the Army, including systems and technology analysis; networks and Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR); modeling and simulation; force and organizational development; acquisition policies; and assessment of tactics, techniques, and procedures. FY 2018 Plans: The Planned Study Program in force development and technology will include key issues for the Army such as systems and technology analysis; networks and C4ISR; modeling and simulation; force and organizational development; acquisition policies; and assessment of tactics, techniques, and procedures. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 funding represents a continuation of FY18 funding adjusted for civilian pay and inflation rate assumptions. Descriptions of Planned Programs represent a revised categorization of study types, not a termination of ongoing efforts.					
Title: Research addressing Army logistics Description: Addresses key issues for the Army, including supply chain management; fleet management and modernization; logistics force development; and infrastructure management. FY 2018 Plans: The Planned Study Program in Army logistics will include key issues for the Army such as supply chain management; fleet management and modernization; logistics force development; and infrastructure management. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 funding represents a continuation of FY18 funding adjusted for civilian pay and inflation rate assumptions. Descriptions of Planned Programs represent a revised categorization of study types, not a termination of ongoing efforts.			4.253	4.420	-
Title: Research addressing strategies, doctrine, and resources Description: Addresses key issues for the Army, including the evolving operating environment; capabilities to face new challenges; partner capabilities; capabilities for stability operations; improvement of resource management; learning from past and present operations; and supporting Army wargames and analysis. FY 2018 Plans: The Planned Study Program in strategy, doctrine, and resources will include key issues for the Army such as the evolving operating environment; capabilities to face new challenges; partner capabilities; capabilities for stability operations; improvement of resource management; learning from past and present operations; and supporting Army wargames and analysis. FY 2018 to FY 2019 Increase/Decrease Statement:			4.682	4.361	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605103A / <i>Rand Arroyo Center</i>		Project (Number/Name) 732 / <i>Arroyo Center Spt</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
FY19 funding represents a continuation of FY18 funding adjusted for civilian pay and inflation rate assumptions. Descriptions of Planned Programs represent a revised categorization of study types, not a termination of ongoing efforts.					
Title: Research addressing military health Description: Addresses key issues for the Army, including the impact of deployment on soldiers and families; quality of Army health care; medical manpower requirements; medical readiness of soldiers and programs; and implications of advances in medical technology. FY 2018 Plans: The Planned Study Program in military health will include key issues for the Army such as the impact of deployment on soldiers and families; quality of Army health care; medical manpower requirements; medical readiness of soldiers and programs; and implications of advances in medical technology. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 funding represents a continuation of FY18 funding adjusted for civilian pay and inflation rate assumptions. Descriptions of Planned Programs represent a revised categorization of study types, not a termination of ongoing efforts.			1.238	1.287	-
Title: Research addressing personnel, training, and health Description: Addresses key issues for the Army, including total workforce management; recruiting and retention; leader development; training readiness and effectiveness; Soldier and family wellness and support. FY 2019 Plans: The Planned Study program will include numerous key issues for the Army such as total workforce management; recruiting and retention; leader development; training readiness and effectiveness; Soldier and family wellness and support. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 funding represents a continuation of FY18 funding adjusted for civilian pay and inflation rate assumptions. Descriptions of Planned Programs represent a revised categorization of study types, not a termination of ongoing efforts.			-	-	4.341
Title: Research addressing forces and logistics Description: Addresses key issues for the Army, including systems and technology analysis; networks and Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR); acquisition policy; force and organizational development; assessment of tactics, techniques, and procedures; supply chain management; fleet maintenance, management and modernization; and tactical, operational, and strategic logistic support FY 2019 Plans:			-	-	6.450

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605103A / Rand Arroyo Center	Project (Number/Name) 732 / Arroyo Center Spt	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
The Planned Study Program in forces and logistics will include key issues for the Army such as systems and technology analysis; networks and C4ISR; acquisition policy; force and organizational development; assessment of tactics, techniques, and procedures; supply chain management; fleet maintenance, management and modernization; and tactical, operational, and strategic logistic support. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 funding represents a continuation of FY18 funding adjusted for civilian pay and inflation rate assumptions. Descriptions of Planned Programs represent a revised categorization of study types, not a termination of ongoing efforts.			
Title: Research addressing strategy, doctrine, and resources Description: Addresses key issues for the Army, including current and potential threats to national interests and U.S. forces; operating environments and their implications for the Army; doctrine and operational concepts for addressing threats; operating and generating force size, scope, and mix to meet demand; building partner capabilities; learning from past and present operations; strategic risk analysis and resource policy; and Army wargames and related analyses. FY 2019 Plans: The Planned Study Program in strategy, doctrine, and resources will include current and potential threats to national interests and U.S. forces; operating environments and their implications for the Army; doctrine and operational concepts for addressing threats; operating and generating force size, scope, and mix to meet demand; building partner capabilities; learning from past and present operations; strategic risk analysis and resource policy; and Army wargames and related analyses. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 funding represents a continuation of FY18 funding adjusted for civilian pay and inflation rate assumptions. Descriptions of Planned Programs represent a revised categorization of study types, not a termination of ongoing efforts.		-	-
Accomplishments/Planned Programs Subtotals		19.863	20.140
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605301A / <i>Army Kwajalein Atoll</i>											
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	219.271	246.663	246.574	-	246.574	243.535	238.897	239.278	243.953	0.000	1,678.171
DW7: <i>Army Kwajalein Atoll Facilities Sustainment</i>	-	15.935	41.905	44.666	-	44.666	47.067	47.489	48.295	49.300	0.000	294.657
DW8: <i>Army Kwajalein Atoll Installation Services</i>	-	115.031	126.880	124.961	-	124.961	127.678	130.497	132.211	134.797	0.000	892.055
DW9: <i>Army Kwajalein Atoll Restoration And Modernization</i>	-	23.793	66.987	66.271	-	66.271	57.887	49.359	47.040	47.968	0.000	359.305
DX2: <i>Army Kwajalein Test Ranges and Mission Support</i>	-	64.512	10.891	10.676	-	10.676	10.903	11.552	11.732	11.888	0.000	132.154

A. Mission Description and Budget Item Justification

This Program Element (PE) is unique in the Research, Development, Test & Evaluation (RDTE) portfolio due to the comprehensive scope of RDTE funding at Army Garrison Kwajalein Atoll, directly supporting 11 leased islands with radars, telemetry, and optics in support of 24/7 New Foreign Launch surveillance, space surveillance, space object identification, offensive and defensive strategic ballistic and interceptor missile testing. In addition, responsibilities include provision of the totality of the logistics and municipal services required to maintain a strategically vital mission support infrastructure in a remote Pacific island chain 2,300 miles southwest of Hawaii. Kwajalein's flexible frequency spectrum, equatorial locale, deep water, and the Department of Defense's (DoD) only land-impact missile testing site, coupled with unmatched instrumentation, make the nation's space and missile operations possible.

The United States (U.S.) Army Kwajalein Atoll/Ronald Reagan Ballistic Missile Defense Test Site (USAKA/RTS), located in the Republic of the Marshall Islands, is a remote, secure activity of the Major Range and Test Facility Base (MRTFB) supported by U.S. Army Garrison Kwajalein Atoll (USAG-KA). USAKA/RTS supports test and evaluation of major Army and DoD missile and space acquisition programs and provides new foreign launch surveillance, space operations (surveillance and object identification) in support of U.S. Strategic Command (USSTRATCOM), US Air Force, and National Aeronautics and Space Administration (NASA) scientific and space programs. USAG-KA provides Base Operations (BOS), Infrastructure and Services (DW7/8/9) support to the USAKA/RTS mission and other resident Programs (i.e. Army missile defense, Air Force & Navy Intercontinental Ballistic Missile (ICBM) developmental and operational tests; Army, Air Force, Navy and Defense Advanced Research Projects Agency (DARPA) hypersonic developmental tests; Air Force Space Fence, Missile Defense Agency (MDA) operational /demonstration/ validation tests; USSTRATCOM space situational awareness requirements (including contributions to the U.S. Space Surveillance Network); and space experiments). Base Operations Services at Kwajalein Atoll are conducted predominantly through a contracted workforce with governmental oversight. These PE-funded contracts provide: installation/base operations and maintenance for all facilities, logistics, and security; power generation fuel supporting the installation and radars; transportation; and mission essential bandwidth via a fiber optic cable system.

The Network Enterprise Technology Command (NETCOM) utilizes Project DX2 to provide civilian pay, manpower service contracts, supporting Information Technology (IT), equipment, and associated costs specifically identified and measurable to plan, manage, coordinate, and execute Information Technology Services Management

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll

at Army Kwajalein Test Ranges. This Project provides C4IM services in accordance with the Department of Army Pamphlet (DA PAM) PAM 25-1-1 and the Army C4IM Services List.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	236.648	246.663	249.157	-	249.157
Current President's Budget	219.271	246.663	246.574	-	246.574
Total Adjustments	-17.377	0.000	-2.583	-	-2.583
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-9.070	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-8.201	-			
• Adjustments to Budget Years	-	-	-2.583	-	-2.583
• FFRDC Transfer	-0.106	-	-	-	-

Change Summary Explanation

In effort to separate operations from installation management functions, funding for operations in Project DX2 (Army Kwajalein Test Ranges and Mission Support) were realigned in Fiscal Year 2018 to Program Element (PE) 0606002A (Ronald Reagan Ballistic Missile Defense Test Site) / Project XW9 (Reagan Test Site).

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll				Project (Number/Name) DW7 / Army Kwajalein Atoll Facilities Sustainment			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
DW7: Army Kwajalein Atoll Facilities Sustainment	-	15.935	41.905	44.666	-	44.666	47.067	47.489	48.295	49.300	0.000	294.657
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project provides resources for preventive maintenance and repair necessary to sustain Kwajalein facilities, preventing further deterioration and keeping good facilities in working order in accordance with industry standards. Proposed Fiscal Year (FY) 2019 funding provides 75% of the Department of Defense (DoD) Facility Sustainment Model (FSM) version 18.2 requirement. Kwajalein facilities currently exhibit significant deterioration due to harsh environmental climate and historical resource shortfalls.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Facility Sustainment									15.935	-	-	
Description: Beginning in FY18, Facility Sustainment activities are delineated into three separate Titles: Army Family Housing, Real Property Maintenance, and Environmental Quality.												
Title: Army Family Housing (AFH) Maintenance									-	2.413	2.462	
Description: Provide the operations to support a Family Housing (FH) inventory consisting of 372 units, Billeting consisting of 147 transient rooms, and Unaccompanied Personnel Housing dormitory inventory consisting of 692 units.												
FY 2018 Plans: Continue to perform change of occupancy maintenance which includes deep cleaning, small interior repairs and interior painting to make the housing habitable and ready for occupancy. Perform spalling repairs on the aged housing masonry housing. Repair interior ceilings of the ?stick construction? homes to prevent further deterioration and prevent mold.												
FY 2019 Plans: Continue to perform change of occupancy maintenance which includes deep cleaning, small interior repairs and interior painting to make the housing habitable and ready for occupancy. Perform spalling repairs on aged housing masonry. Repair interior ceilings of the ?stick construction? homes to prevent further deterioration and prevent mold.												
FY 2018 to FY 2019 Increase/Decrease Statement: Cost change accommodates inflation.												
Title: Real Property Maintenance									-	39.378	42.082	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DW7 / Army Kwajalein Atoll Facilities Sustainment	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Description: Provide maintenance and repair activities necessary for preventive maintenance and repair necessary to sustain Kwajalein facilities and utilities preventing further deterioration. Fund facilities and utilities at minimum acceptable levels to mitigate risk of catastrophic failures. Includes regularly scheduled adjustments and inspections, preventive maintenance tasks and emergency response and service calls for minor repairs. Also includes costs of major repairs or replacement of facility components that are expected to occur periodically throughout the expected service life. This work includes: regular roof replacement; refinishing wall surfaces; repairing and replacing electrical, plumbing, and cooling systems; replacing tile and carpeting; and similar types of work. Sustainment, however, is not intended to keep facilities adequately functioning beyond their expected service lives. FY 2018 Plans: Continue to service over 1,477 facilities on Kwajalein, Roi-Namur, and the 9 other islands totaling 2.6 Million square feet. Execute an aggressive maintenance plan based on the significant corrosive environment; prepare maintenance plans and schedules for recurring or preventive maintenance; perform periodic pre-maintenance inspections; perform preventive and corrective maintenance; report the need for major repair, replacement, or rehabilitation; prepare records of maintenance actions performed and deficiencies discovered; and perform post-maintenance inspections. FY 2019 Plans: Continue to service over 1,477 facilities on Kwajalein, Roi-Namur, and the 9 other islands totaling 2.6 Million square feet. Continue an aggressive maintenance plan based on the significant corrosive environment; prepare maintenance plans and schedules for recurring or preventive maintenance; perform periodic pre-maintenance inspections; perform preventive and corrective maintenance; report the need for major repair, replacement, or rehabilitation; prepare records of maintenance actions performed and deficiencies discovered; and perform post-maintenance inspections. FY 2018 to FY 2019 Increase/Decrease Statement: Cost change accommodates inflation and increased maintenance requirements.			
Title: Environmental Quality Description: Provide manpower necessary to achieve, evaluate, and sustain compliance with appropriate Federal, State, and local environmental laws, Executive Orders, DoD Directives, regulations, and overseas country-specific Final Governing Standards, in order to protect human health and safety and reduce total cost to the Army through environmental compliance, conservation, and pollution prevention. Enables installations to comply with legal environmental mandates and critical stewardship responsibilities that impact management and modernization of installations, while sustaining natural and cultural resources in a manner that provides continued access and long-term use of training lands to support the Army's installation missions.. FY 2018 Plans:		-	0.114
			0.122

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DW7 / Army Kwajalein Atoll Facilities Sustainment	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Continue oversight and management of environmental workload.			
FY 2019 Plans: Continue oversight and management of environmental workload.			
FY 2018 to FY 2019 Increase/Decrease Statement: Cost change accommodates inflation and improved compliance.			
Accomplishments/Planned Programs Subtotals		15.935	41.905
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll				Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
DW8: Army Kwajalein Atoll Installation Services	-	115.031	126.880	124.961	-	124.961	127.678	130.497	132.211	134.797	0.000	892.055
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project resources Base Operations/Installation Services Support for United States (U.S.) Army Kwajalein (USAKA) located in the Republic of the Marshall Islands, a remote, secure activity designated as a Major Range and Test Facility Base (MRTFB). Kwajalein is a government-managed/contractor-operated site and is primarily dependent upon its associated support contracts for the daily operations and maintenance of Base Operations/Installation Services Support. Installation Services Support consists of: Medical/Dental Services; Education (K-12) Services; Food/Grocery Services; Contracted Security Guards; Aviation/Marine support; and logistical (fuel/transportation) operations support requirements. Base Operations/Installation Services Support resourcing is a critical enabler to ensure continuity of operations supporting Test and Evaluation and Space Operations of the Reagan Test Site in its role as an MRTFB Activity.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Base Operations Support									56.512	-	-	
Description: Beginning in FY 2018, Base Operations Support activities have been itemized as separate Planned Programs in order to provide a detailed functional segmentation of installation management programs. Base Operations Support activities ensure the health, safety and welfare of Garrison, tenant personnel, and families. Functions supported include: Installation Management, Administrative and Civil Law, Criminal Law and Discipline, Client Services, Claims, Religious Support, Public Affairs, Equal Employment Opportunity (EEO), Internal Review, Installation Safety and Occupational Health, Administrative Services, Resource/Financial Management, Unaccompanied Personnel Housing and Basic Officers Quarters Management, Family Housing Management, Army Substance Abuse Program, Army Community Services, Child and Youth Sports, Recreation, and Libraries, Business Operations, Schools, Fire and Emergency Response Services, Custodial Services, Refuse Removal, Grounds Maintenance, Electrical Services, Heating/Cooling Services, Water Services, Waste Water Services, Other Utility Services, Compliance and Conservation Programs, Pollution Prevention Programs, Indoor and Outdoor Pest Management, Physical Security, Law Enforcement Services, Anti-Terrorism Services, Installation Security Program Management Support, Army Emergency Management Services, Military Personnel Services, Civilian Personnel Services, Continuing Education, Emergency Disaster Prep, Host Nation Services, and Protocol Services.												
Title: Logistical Support									51.828	-	-	
Description: Beginning FY 2018, logistical support has been itemized into functional activities to maximize transparency. This activity covered all logistic functions to include marine and air field operations along with transportation, supply, laundry, food service and maintenance. Transportation includes the operation of transportation motor pools, installation transportation offices,												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
intra-installation rail equipment, and cost of leased vehicles; also includes storage and movement of privately-owned household goods of military personnel (and civilian personnel in overseas areas). Excludes OSA and Watercraft. Supply provides for installation supply operations which include: Ammunition Supply Point services, operation of a central receiving point for goods delivered to the installation, management of Organizational Clothing and Individual Equipment (OCIE), management of non-deployable installation property, and receipt, storage, issue, reutilization and tracking of hazardous materials, secondary items and bulk petroleum for garrison and non-brigade tenant units. Procures petroleum, oils and lubricants (POL) of which approximately 90% of POL is for power generation and the remainder for intra atoll marine and aviation transportation, and for intra-island land transportation and heavy equipment. Laundry account funds Government Owned Contractor Operated (GOCO) and Contractor Owned Contractor Operated (COCO) facilities that provide laundry and dry cleaning service for OCIE items to units in accordance with (IAW) Army Regulation (AR) 210-130. Food account funds the operation of Active, Guard, and Reserve dining facilities and Troop Issue Subsistence Activities (TISA), including pay of government and contract employees, food service supplies, and replacement equipment. Maintenance includes DS/GS support maintenance (Non-Tactical Support).				
Title: Medical/Dental Support Description: Beginning FY 2018, medical / dental support has been itemized into functional activities to maximize transparency. This activity provided a fully operational community hospital, a secondary medical clinic, veterinarian services, physical therapy clinic and a dental clinic. Support includes but is not limited to medical lab and imaging services, pharmacy services, medical services management, and all medical functions to include inspections of medical facilities and calibration of equipment.		6.691	-	-
Title: Army Family Housing (AFH) Operations Description: Funds all costs associated with the operations of a residence to include management, services, furnishing and utilities. FY 2018 Plans: Continue to fund costs associated with the operations of Family Housing (FH) inventory consisting of 438 units, which includes 106 condemned units, and is comprised of three different types: Housing units constructed of concrete masonry and poured concrete Circa 1955 and 1994; units constructed of wood, metal studs and aluminum siding circa 1988, and modular housing-prefabricated, commonly referred to as trailers. The Billeting Section consists of 185 transient rooms; 3 Distinguished Visitor? s Quarters; and 6 multi-purpose/recreational housing. Transient housing facilities are located on Kwajalein and Roi-Namur and consist of permanent buildings constructed of concrete masonry. The Unaccompanied Personnel Housing (UPH) inventory consists of 833 units comprised of permanent buildings constructed of concrete masonry and poured concrete. UPH units are located on both Kwajalein and Roi-Namur. FY 2019 Plans:		-	6.834	6.971

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll		Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Continue to fund costs associated with the operations of FH inventory, consisting of 372 units, and is comprised of three different types: Housing units constructed of concrete masonry and poured concrete circa 1955 and 1994; units constructed of wood, metal studs and aluminum siding circa 1988, and modular housing- prefabricated, commonly referred to as domes. The Billeting Section consists of 147 transient rooms. Transient housing facilities are located on Kwajalein and Roi-Namur and consist of permanent buildings constructed of concrete masonry. The UPH inventory consists of 692 units comprised of permanent buildings constructed of concrete masonry and poured concrete. UPH units are located on both Kwajalein and Roi-Namur.					
FY 2018 to FY 2019 Increase/Decrease Statement: Increase represents inflation.					
Title: Army Airfields (AAF) and Heliports (AHP)			-	2.722	7.687
Description: Provides Resources Operations and Maintenance for Army Airfield and Aviation Fleet. Provides manpower, equipment acquisition, sustainment and maintenance in support of airfield operations, airfield management, aircraft services, air traffic services (ATS), air transport, airspace management and control, and air traffic control equipment maintenance. Includes airfield specific equipment, safety requirements, Hazardous Materials (HAZMAT) support, and airfield obstruction surveys. AAF/AHP functions support Department of Defense (DoD) priorities for Army and joint force capabilities and inter-agency, intra-agency and multinational operations to meet current and future full spectrum requirements. Funds AAF/AHP functions at the necessary state of readiness to support missions across 11 islands (2 fixed wing/6 rotator wing) in addition to international aircraft traffic and reduces risk of major accidents/incidents.					
FY 2018 Plans: Continue to provide services for all mission essential DoD, commercial, and transient aircraft. Operate 2 Airfields and 8 outer islands helipads. Operate and maintain 1 Air Traffic Control (ATC) tower with class D airspace, 2 separate airfield operations and integrated Standard Terminal Automation Replacement System (STARS) radar for aircraft separation and de-confliction. Support all intra atoll cargo and personnel movements with 2 fixed wing and 4 rotary wing aircraft.					
FY 2019 Plans: Provide services for all mission essential DoD, commercial, and transient aircraft. Operate 2 Airfields and 8 outer islands helipads. Operate and maintain 1 Air Traffic Control (ATC) tower with class D airspace, 2 separate airfield operations and integrated STARS radar for aircraft separation and de-confliction. Support all intra atoll cargo and personnel movements with 2 fixed wing and 4 rotary wing aircraft. Support transient international flights.					
FY 2018 to FY 2019 Increase/Decrease Statement: Increase reflects Net Zero change to DW8 line to better align funding and execution.					
Title: Army Community Services (ACS)			-	0.267	0.274

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll		Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Description: Provides programs that prevent family violence/fatalities through family advocacy programs and counseling; provide specialized assistance to provide prevention, education and family sustainment for military and civilian personnel and their families; and also provide critical financial, employment and relocation education and training to Soldiers, civilians, and their Families. FY 2018 Plans: Continue to provide necessary/routine Army Community Services to the Installation. FY 2019 Plans: Continue to provide necessary/routine Army Community Services to the Installation. FY 2018 to FY 2019 Increase/Decrease Statement: Increase represents inflation.					
Title: Child and Youth Services (CYS) Description: Provides child care, youth, and school services (CYSS) programs for children and youth. Provides child and youth spaces required to meet Army's child care and youth participation demand goals. Resources the following programs: 1) Child Development Centers; 2) Family Child Care; 3) School Age Care; 4) Youth Programs; 5) Youth Sports & Fitness; 6) School Support Services. Resources staffing levels necessary to minimize risk of child abuse, and the oversight to achieve and maintain DoD Certification (State licensing equivalent) and National Accreditation per statutory requirement and DoD policy. FY 2018 Plans: Continue to provide resources to operate CYS programs on Kwajalein to include a Child Development Center, School Age Services programs, Supplemental Programs and Services (SPS), and Youth programs and services. Establish and maintain developmentally and age-appropriate staff-child/youth interactions, activities, activity schedules and plans, supplies and equipment, furnishings, and environment (both indoors and outdoors) that lead to the social, physical, cognitive, and emotional growth of children up to 18 years. Ensure that youth programs include, at a minimum, seasonal sports programs, 4-H Club programs, Boys and Girls Club of America programs, instructional programs, recreational programs, programs that promote leadership and citizenship, intervention services, and teen programs. FY 2019 Plans: Continue to provide resources to operate CYS programs on Kwajalein to include a Child Development Center, School Age Services programs, Supplemental Programs and Services, and Youth programs and services. Establish and maintain developmentally and age-appropriate staff-child/youth interactions, activities, activity schedules and plans, supplies and equipment, furnishings, and environment (both indoors and outdoors) that lead to the social, physical, cognitive, and emotional			-	2.350	0.422

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll		Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
growth of children up to 18 years. Ensure that youth programs include, at a minimum, seasonal sports programs, 4-H Club programs, Boys and Girls Club of America programs, instructional programs, recreational programs, programs that promote leadership and citizenship, intervention services, and teen programs.					
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease reflects Net Zero change to DW8 line to better align funding and execution.					
Title: Engineering Services Description: Provides (1) Facility Management and Administration and (2) Installation Engineering Services. Facility Management includes public works management costs, contract management, material procurement, facility data management; to include, Geographic Information System (GIS) and Sustainment Management Systems (SMS) suite implementation/inspections, furnishings management costs, and real property and real estate management. Installation Engineering Services includes facility engineer service contracts, annual inspection of facilities, master planning, overhead of planning and design, and overhead of construction management and non-Sustainment and Restoration Modernization (SRM) service calls. Excludes: vehicle maintenance, in-house shop and contracted personnel who routinely perform facility sustainment activities; and design engineers or project managers or construction inspectors who manage and oversee facility sustainment and construction projects. FY 2018 Plans: Continue to provide necessary/routine engineering services to the Installation. FY 2019 Plans: Continue to provide necessary/routine engineering services to the Installation. FY 2018 to FY 2019 Increase/Decrease Statement: Increase reflects Net Zero change to DW8 line to better align funding and execution.			-	3.601	4.312
Title: Soldier Recreation and Community Support Description: Provides the development and delivery of Soldier Programs, Community Recreation, and Direct Common Family and Morale, Welfare and Recreation (FMWR) Support Services that sustain the Total Army, in accordance with (IAW) the Army Campaign Plan and the Chief of Staff of the Army (CSA)'s Strategic Priorities. Programs funded include sports, fitness and aquatics, recreation centers, libraries, outdoor recreation, skill development, bowling (16 lanes or less); Direct Common FMWR Support Services (essential command and control and risk management programs for property, funds and personnel); and as designated by Congress, Category C FMWR activities at remote and isolated sites. These programs resource readiness and resiliency and build upon physical, emotional, social and psychological coping skills; funds opportunities for Soldiers, civilians and Families to foster self-reliance, morale and a sense of belonging by offering positive discretionary time choices, mitigating aberrant behaviors through individual skill development and team participation.			-	8.522	0.241

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Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll		Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
FY 2018 Plans: Continue to provide resources necessary to perform selected retail and base food service operations at RTS typical of those found in an American community.to meet the needs of USAKA/RTS residents, tenants, satellite activities, range users, and other authorized organizations/personnel on Kwajalein Island, Roi-Namur Island, Meck Island, and on other USAKA/RTS outer islands. Operate a Small Boat Marinas at Kwajalein and Roi-Namur offering watercraft-licensing to include water safety and boating instructions for all classes of available rental boats on a reimbursable basis. Provide postal services to meet the needs of USAKA/RTS residents, tenants, satellite activities, range users, and other authorized organizations/personnel on Kwajalein and Roi-Namur Islands. FY 2019 Plans: Continue to provided resources necessary to sustain Soldier Recreation and Community Support for a community population of 1400 and meet the needs of USAKA/RTS residents, tenants, satellite activities, range users, and other authorized organizations/personnel on Kwajalein Island, Roi-Namur Island, Meck Island, and on other USAKA/RTS outer islands. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease reflects Net Zero change to DW8 line to better align funding and execution.					
Title: Fire and Emergency Services (FES) Description: Provides for fire and emergency services for the installation, including preparation for and response and mitigation of aircraft and structural firefighting and rescue, technical rescue, Hazardous Materials and Weapons of mass destruction/Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) responses, and out of control wildfire mitigation in an all-hazard response environment. FY 2018 Plans: Continue to provide Fire and Emergency Services are performed in association with the Base Support/Logistics contractor. Provide fire protection services for all USAG-KA and RTS assets, to include facilities, structural, aircraft, shipboard and small watercraft, and wild land fires. Services provide protection for the fire hazards associated with operations and community at USAG-KA and RTS. Provide Fire Protection on Kwajalein and Roi-Namur 24 hours. Provide fire Protection and Emergency Services on Meck during duty hours, mission periods, and hazardous operations. Provide ambulance service on Kwajalein, Meck, and Roi-Namur Islands. Provide fire safety education and activities for the schools and day-care centers and for adult residents of USAG-KA and RTS. Train personnel normally assigned to work on Illeginni, Ennylabegan, Gagan, and Legan islands as their normal and permanent work sites in first aid, Cardiopulmonary Resuscitation (CPR), and operation of fire extinguishers and fire alarm and suppression equipment peculiar to the island. Provide rescue and emergency medical personnel available for			-	7.677	4.717

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll		Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
immediate dispatch to aircraft or vessel crash site, entry into the ocean or lagoon, and be provisioned for immediate rescue and emergency medical assistance. FY 2019 Plans: Continue to provide fire and Emergency Services which are performed in association with the Base Support/Logistics contractor. Provide fire protection services for all USAG-KA and RTS assets, to include facilities, structural, aircraft, shipboard and small watercraft, and wild land fires. Services provide protection for the fire hazards associated with operations and community at USAG-KA and RTS. Provide Fire Protection on Kwajalein and Roi-Namur 24 hours Provided Fire Protection and Emergency Services on Meck during duty hours, mission periods, and hazardous operations. Provide ambulance service on Kwajalein, Meck, and Roi-Namur Islands. Provide fire safety education and activities for the schools and child development center and for adult residents of USAG-KA. Train personnel normally assigned to work on the remote islands of Illeginni, Ennylabegan, Gagan, and Legan in first aid, Cardiopulmonary Resuscitation (CPR), and operation of fire extinguishers and fire alarm and suppression equipment peculiar to the island. Provide rescue and emergency medical personnel available for immediate dispatch to aircraft or vessel crash site, entry into the ocean or lagoon, and be provisioned for immediate rescue and emergency medical assistance. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease reflects Net Zero change to DW8 line to better align funding and execution.					
Title: Financial Management (FM) Activities Description: Provides Directorate of Resource Management (DRM) and DRM base support for Army tenants resident on or receiving support from the Army installation. Functions of the DRM include program, budget, manpower, documentation, Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA)/Support Agreement management, finance and accounting. FY 2018 Plans: Continue to provide program/budget support and budget execution, financial advisory service and accounting liaison services. Support Audit Readiness through Statement of Budgetary Resource samples. Continue to establish a Inter-service Support Agreements(ISSA). Provide management analysis on manpower requirements and organizational structure analysis. Provide Contracting Officer Representative oversight for the Program Management functions for the base-support contract. Provide resource management support for the development of the new base-support contract. FY 2019 Plans: Continue to provide program/budget support and budget execution, financial advisory service and accounting liaison services. Support Audit Readiness through Statement of Budgetary Resource samples. Continue to establish Inter-service Support			-	0.768	0.787

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Agreements(ISSA). Provide management analysis on manpower requirements and organizational structure analysis. Provide Contracting Officer Representative oversight for the Program Management functions for the base-support contract.				
FY 2018 to FY 2019 Increase/Decrease Statement: Increase represents inflation adjustment.				
Title: Food Services		-	4.385	8.653
Description: Provides for the operation of dining facilities including contract employees, food service supplies, and equipment life-cycle replacement.				
FY 2018 Plans: Continue to provide services for DoD, contractor, host nation, interagency and intra-agency organizations with multiple facilities on three different islands to include 3 cafeterias, bakery, grocery store, dry/cold warehousing, Army and Air Force Exchange Service (AAFES) retail stores, AAFES food court, catering services and private organizations. Monitored and approved food purchases and preparation. Conduct food service inspections.				
FY 2019 Plans: Continue to provide services for DoD, contractor, host nation, interagency and intra-agency organizations with multiple facilities on three different islands to include 3 cafeterias, bakery, grocery store, dry/cold warehousing, AAFES retail stores, AAFES food court, and catering services and private organizations. Monitor and approve food purchases and preparation. Conduct food service inspections.				
FY 2018 to FY 2019 Increase/Decrease Statement: Increase reflects Net Zero change to DW8 line to better align funding and execution.				
Title: Unaccompanied Housing		-	1.543	1.581
Description: Provides for Government-owned Unaccompanied Housing including appropriated funded Army lodging, lifecycle replacement furnishings, and other associated costs. Includes Manpower purchase, control, moving, management and handling of lifecycle replacement and repair for all unaccompanied housing furnishings. Includes all costs of authorized replacement furnishings in existing inventory.				
FY 2018 Plans: Continue to provide contractor management, oversight, maintenance and repair (M&R), and control of all USAGKA and RTS 833 Housing/Billeting Facilities Utilized best commercial residential business practices to ensure quality of life standards are achieved and enhanced, and are in compliance with adequacy and life and safety standards comparable to those found in commercial properties. Provide Master Key control services. Provide and implement a sound furnishings and appliances program				

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
that addresses acquisition, replacement, M&R, and refurbishing. Provide Hospitality Kits consisting of the minimum essential items to operate a household until permanent party personnel's Household Goods (HHG) arrive and from HHG shipment until departure. Provide Change of Occupancy Maintenance (COOM) on all FH facilities prior to reassignment to in-coming resident. FY 2019 Plans: Continue to provide contractor management, oversight, M&R, and control of all USAG-KA Housing/ Billeting Facilities Utilize best commercial residential business practices to ensure basic quality of life standards are achieved and are in compliance with life and safety standards. Provide Master Key control services. Provide and implement a sound furnishings and appliances program that addresses acquisition, replacement, M&R, and refurbishing. Provide Hospitality Kits consisting of the minimum essential items to operate a household until permanent party personnel's HHG arrive and from HHG shipment until departure. Provide COOM on all facilities prior to reassignment to in-coming resident. FY 2018 to FY 2019 Increase/Decrease Statement: Increase represents inflation adjustment.				
Title: Law Enforcement Description: Provides Law Enforcement (LE) activities/services for the protection of people and property, enforcement of laws, and maintenance of order. This effort covers, but is not limited to: all personnel and operating costs associated with LE operations, salaries, overtime, benefits, material and supplies, equipment, vehicles, training and management for LE response forces (Department of the Army Civilian Police (DACP) and military police (MP)). Funds the conduct of motor vehicle traffic supervision, and liaison with civilian LE agencies. Funds LE work load derived from historical responses to calls for service (i.e. Crimes against Persons, Drug Crimes, Traffic Crimes, Absent Without Leave (AWOL), Sex Crimes, and Crimes against Property, Environmental Violations, Fraud Crimes, Alarm Response and Public Service Calls), investigation of non-felony level offenses, preparation and distribution of MP reports and related documents, and collection and analyses of crime statistics. FY 2018 Plans: Will provide LE activities/services for the protection of people and property, enforcement of laws, and maintenance of order. Will cover, but not limited to, all personnel and operating costs associated with LE operations, salaries, overtime, benefits, material and supplies, equipment, vehicles leases, training and management for LE response forces. FY 2019 Plans: Continue to provide LE activities/services for the protection of people and property, enforcement of laws, and maintenance of order. Will cover, but not limited to, all personnel and operating costs associated with LE operations, salaries, overtime, benefits, material and supplies, equipment, vehicles, training and management for LE response forces. FY 2018 to FY 2019 Increase/Decrease Statement:		-	1.905	1.710

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Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Decrease reflects Net Zero change to DW8 line to better align funding and execution.				
Title: Materiel Maintenance Description: Provide for Automotive, Construction, General Equipment, and Armament Maintenance. Also provides Field and Sustainment level maintenance services to Army activities in accordance with AR 750-1; provides maintenance technical assistance to supported units and activities, and provides material maintenance on base operations support equipment. FY 2018 Plans: Continue to provide resources for the maintenance of all 6 aircraft, 14 marine vessels, heavy equipment, non-tactical and tactical equipment, construction equipment; base operations equipment and marine navigational aides. Provide government estimates for repair/replacement of damaged, lost or lifecycle replacement equipment. Provide resources for On Condition Cyclic Maintenance (OCCM) for marine vessels. FY 2019 Plans: Continue to provide resources for the maintenance of all 6 aircraft, 17 marine vessels, heavy equipment, non-tactical and tactical equipment, construction equipment; base operations equipment and marine navigational aides. Provide government estimates for repair/ replacement of damaged, lost or lifecycle replacement equipment. Provide resources for OCCM for marine vessels. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease reflects Net Zero change to DW8 line to better align funding and execution.		-	9.129	2.822
Title: Municipal Services Description: Provides for municipal services including grounds maintenance, custodial, pest management, solid waste or refuse handling operations, pavement clearance through the removal of snow/ice/sand and street sweeping, and homeless shelter support. FY 2018 Plans: Provide necessary/routine municipal services to the Installation. FY 2019 Plans: Provide necessary/routine municipal services to the Installation. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease reflects Net Zero change to DW8 line to better align funding and execution.		-	5.949	1.842
Title: Installation Command and Management		-	2.282	32.997

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll		Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Description: Provides for a K-12 school system, medical/dental services, and Base Support Contract overhead fees. Additionally, supports offices of the Commander, Staff Judge Advocate (SJA), Chaplain, Public Affairs (PA), and Safety Office. Supports civilian pay and benefits, training, duty travel, Permanent Change of Station (PCS) costs, equipment, and contractual services for installation command and management activities. Kwajalein Medical/Dental services provide family practice and emergency services at Kwajalein (2-5 days for MEDEVAC support to Honolulu), a secondary clinic on Rio-Namur, and a dental clinic. Support includes but is not limited to medical lab and imaging services, pharmacy services, basic dental services, and all medical functions including inspections of medical facilities. FY 2018 Plans: Continue to provide base support operations, through the Base Operations Support (BOS) contractor, supporting the strategically important RTS which includes 11 defense sites. USAG-KA support to the U.S. Embassy advancing the relationship with the Republic of the Marshall Islands. Provide installation management functions for a diverse population of 288 Department of the Army Civilians and active duty military personnel & 1100 contractor's their respective dependents. Provide necessary/routine Installation Command and Management services to the Installation. Plan, organize, staff, direct, and control the USAKA Medical and Dental programs including management and administration of total health care at USAKA. Provide routine and emergency inpatient and outpatient medical and dental services to USAKA residents, designated indigenous personnel, and official visitors at USAKA. Perform diagnosis, treatment, and preventative health services and administer the Medical and Dental programs efficiently, using standards of care similar to small stateside community hospitals. Provide a full range of Educational services on USAKA to include kindergarten, elementary, junior high, senior high, and adult education. FY 2019 Plans: Provide Installation Command and Management across 11 islands/defense sites to a population of over 100 Active Duty Military and Department of the Army civilians & 1100 contractors and their family members. Plan, organize, staff, direct, and control all aspects of installation and command management. FY 2018 to FY 2019 Increase/Decrease Statement: Increase reflects Net Zero change to DW8 line to better align funding and execution.					
Title: Physical Security Matters Description: Provides resources for physical security programs and equipment to support Army installations and facilities requirements. Procures, installs, maintains and/or leases physical security equipment to include, but not limited to barriers; blast mitigation devices; communication systems; explosive detection devices; intrusion detection systems and devices; sensors; site improvements; management/planning; and security forces and technicians. Funds contract security guards including military working dog management and equipping the installation with explosive and drug detection dog capabilities.			-	5.293	5.423

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
FY 2018 Plans: Continue to provide the necessary physical security procedures and materials to ensure USAG-KA maintains all proper security measures.				
FY 2019 Plans: Continue to provide the necessary physical security procedures and materials to ensure USAG-KA maintains all proper security measures.				
FY 2018 to FY 2019 Increase/Decrease Statement: Increase represents inflation adjustment and incremental (net zero) adjustment to DW8 line to better align funding and execution.				
Title: Army Security Programs		-	0.114	0.12
Description: Funds Army Command security activities supporting: Information Security, Personnel Security, Industrial Security, Communications Security (COMSEC) Policy, Security Education, Training and Awareness (SETA), Special Access Program (SAP) Security, Sensitive Compartmented Information (SCI) Security, Foreign Disclosure, and Technology Protection.				
FY 2018 Plans: Continue to provide the necessary security procedures and materials to ensure USAGKA maintains all proper security measures to ensure successful missions continue on USAGKA.				
FY 2019 Plans: Continue to provide the necessary security procedures and materials to ensure USAGKA maintains all proper security measures to ensure successful missions continue on USAGKA.				
FY 2018 to FY 2019 Increase/Decrease Statement: Increase represents inflation adjustment.				
Title: Supply Logistics		-	2.911	3.059
Description: Provides supply operations which support: ammunition supply point services, bulk petroleum operations, marine and aviation assets, Army tenants, operation of a central receiving point and/or Installation Supply Support Activity (SSA) for goods delivered to the installation, management of non-deployable installation property, and receipt, storage, issue, reutilization and tracking of hazardous materials.				
FY 2018 Plans: Continue to provided resources for property accountability of all Government Furnished Equipment/Contractor Acquired Property (GFE/CAP), reutilization items, Military Standard Requisitioning and Use Procedures (MILSTRIP) ordering, hazardous items, bulk				

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
fuel ordering and delivery to multiple outer islands. Provided Quality Assurance Evaluator (QAE) services for Defense Logistics Agency - Europe 9 (DLA-E) fuel farm; disposition of obsolete items to the host nation government; FY 2019 Plans: Continue to provided resources for property accountability of all GFE/CAP, reutilization items, Military Standard Requisitioning and Use Procedures ordering and delivery to multiple outer islands. Dispose of obsolete items in accordance with Army equipment disposition procedures. FY 2018 to FY 2019 Increase/Decrease Statement: Increase represents inflation adjustment.				
Title: Transportation Services Description: Provides the operation of installation transportation offices, transportation motor pools, and cost of rolling stock; also includes movement of privately-owned household goods of military personnel (and civilian personnel in overseas areas) in connection with assignment, reassignment, or termination of government-furnished family housing. FY 2018 Plans: Continue to provide resources for the operation of all transportation services to include 6 aircraft, 14 marine vessels, and over 200 pieces of rolling stock. Operated a centralized motor pool. Fund operations for movement of all international and intra atoll air and surface cargo to include government and contractor household goods, HAZMAT, United States Postal Service (USPS) mail and food items. Safely ferry over 48,000 passengers per month within the atoll on various USAGKA marine assets. FY 2019 Plans: Continue to provide resources for the operation of all transportation services to include 6 aircraft, 17 marine vessels, and over 200 pieces of rolling stock. Operate a centralized motor pool. Fund operations for movement of all international and intra atoll air and surface cargo to include mission critical equipment and supplies, household goods, HAZMAT, United States Postal Service (USPS) mail, medical, and food items. Safely ferry over 48,000 mission critical employees per month within the atoll on various USAGKA marine assets. FY 2018 to FY 2019 Increase/Decrease Statement: Increase represents inflation adjustment and incremental (net zero) adjustment to DW8 line to better align funding and execution.		-	21.577	21.493
Title: Utilities Description: Provide utility services - production and distribution of utilities including expenses for electricity, steam, hot water, fuels and other utilities, and operation of electrical, air conditioning, refrigeration, water distribution, and wastewater collection and treatment plants and systems.		-	35.888	17.474

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
FY 2018 Plans: Continue to provide resources to operate and maintain seven Power generation and distribution systems on Kwajalein; nine on Roi, five on Meck, and eleven total on the outer islands of Carlos, Gagan, Illeginni, and Legan, distributing over 7.5 Million kilowatt hours / month. Operate, maintain, and repair all prime power plants, distribution systems, and ancillary equipment and related systems, including fixed and portable auxiliary generators. Provide reliable power during mission windows. Develop and implement a maintenance plan which includes operator maintenance, predictive maintenance, Program Management (PM), cyclical, and recurring maintenance, as well as periodic equipment and systems overhauls for all power production systems. Provide appropriate staff to operate power plants 24 hours a day. Operate and maintain potable and non-potable water production & distribution systems. Operate and maintain wastewater treatment plant water systems and storage including equipment. Distribute water to a population of approximately 1400 people consuming over 5.3 million gallons of water per month. Operate all wastewater treatment plants and equipment, collection and distribution systems, and all ancillary equipment and other related systems, including septic tanks. Develop, implement, and manage a waste management program including collection, incineration, landfill, compost, and recycling facilities. Provide preventative, cyclical and recurring, and unscheduled maintenance and repair of the Incinerator and all ancillary equipment and systems. FY 2019 Plans: Continue to provide resources including fuel to operate and maintain seven Power generation and distribution systems on Kwajalein; nine on Roi, five on Meck, and eleven total on the outer islands of Carlos, Gagan, Illeginni, and Legan, distributing over 7.5 Million kilowatt hours / month. Operate, maintain, and repair all prime power plants, distribution systems, and ancillary equipment and related systems, including fixed and portable auxiliary generators. Provide reliable power during mission windows. Develop and implement a maintenance plan which includes operator maintenance, predictive maintenance, Program Management (PM), cyclical, and recurring maintenance, as well as periodic equipment and systems overhauls for all power production systems. Provide appropriate staff to operate power plants 24 hours a day. Operate and maintain potable and non-potable water production & distribution systems. Operate and maintain wastewater treatment plant water systems and storage including equipment. Distribute water to a population of approximately 1400 people consuming over 5.3 million gallons of water per month. Operate all wastewater treatment plants and equipment, collection and distribution systems, and all ancillary equipment and other related systems, including septic tanks. Develop, implement, and manage a waste management program including collection, incineration, landfill, compost, and recycling facilities. Provide preventative, cyclical and recurring, and unscheduled maintenance and repair of the Incinerator and all ancillary equipment and systems. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease reflects Net Zero change to DW8 line to better align funding and execution.			
Title: Environmental Quality		-	3.114
			2.049

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll		Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Description: Provides manpower and funding necessary to achieve, evaluate, and sustain compliance with appropriate Compact of Free Association, national, and USAKA Environmental Standards, Executive Orders, DoD Directives, regulations, and overseas country-specific. Final Governing Standards, in order to protect human health and safety and reduce total cost to the Army through environmental compliance, conservation, and pollution prevention. Enables installations to comply with legal environmental mandates and critical stewardship responsibilities that impact management and modernization of installations, while sustaining natural and cultural resources in a manner that provides continued access and long-term use of training lands to support the Army's installation missions. Also includes costs associated with Range Military Construction (MILCON) to address one-time mitigation actions. FY 2018 Plans: Provide necessary/routine environmental quality services to the Installation. FY 2019 Plans: Provide necessary/routine environmental quality services to the Installation. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease represents inflation adjustment and incremental (net zero) adjustment to DW8 line to better align funding and execution.					
Title: Anti-Terrorism (AT) Description: Funds the Army Antiterrorism program, a defensive program to protect against Terrorism. Supports the following: Antiterrorism installation and mission requirements: Combatant Commands (COCOM) Antiterrorism requirements (Army as Executive Agent (EA)), Antiterrorism Program Management, Antiterrorism Training and Awareness efforts (Area of Responsibility (AOR) specific, Level I Antiterrorism Awareness Training, Level II Antiterrorism Officers Training, Level III Pre-command training, and Level IV Antiterrorism Executive Seminar), protection of High Risk Personnel (HRP) to include support requirements (equipment), execution of Antiterrorism Assessments (Terrorism Vulnerability Assessments, Special Event Assessments, Pre-deployment Vulnerability Assessments, and Comprehensive Antiterrorism Reviews) designed to identify and fix protection vulnerabilities that will protect personnel and facilities from terrorist acts, intelligence support to Army Antiterrorism, conduct annual Antiterrorism Exercises designed to execute Antiterrorism plans, and the implementation of the Random Antiterrorism Measures Program (RAMP) and the Force Protection Condition (FPCON) system. FY 2018 Plans: Provide antiterrorism programs. Provide personnel with the necessary training and identify high risk individuals when appropriate. Continue to work with our resident military intelligence organization to keep abreast of new developments and trends within			-	0.049	0.205

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DW8 / Army Kwajalein Atoll Installation Services	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
terrorist organizations which may effect our installation. Continue to identify and update vulnerabilities to our facilities and emplace protective measures to reduce risks to mission.			
FY 2019 Plans: Provide antiterrorism programs. Provide personnel with the necessary training and identify high risk individuals when appropriate. Continue to identify and update vulnerabilities to our facilities and emplace protective measures to reduce risks to mission.			
FY 2018 to FY 2019 Increase/Decrease Statement: Increase represents inflation adjustment and incremental (net zero) adjustment to DW8 line to better align funding and execution.			
Title: Personnel Services Delivery Description: Provides a human resource specialist responsible for providing all aspects of human resource management, administrative, and counsel to the Garrison Staff.		-	-
FY 2019 Plans: Continue to provide human resource support to the Garrison Staff.			
FY 2018 to FY 2019 Increase/Decrease Statement: New line for FY19 - Realigned from existing programs. Increase reflects Net Zero change to DW8 line to better align funding and execution.			0.121
Accomplishments/Planned Programs Subtotals		115.031	126.880
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll				Project (Number/Name) DW9 / Army Kwajalein Atoll Restoration And Modernization			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
DW9: Army Kwajalein Atoll Restoration And Modernization	-	23.793	66.987	66.271	-	66.271	57.887	49.359	47.040	47.968	0.000	359.305
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Funds the restoration and modernization of United States Army Kwajalein Atoll degraded infrastructure (real property/facilities) to working condition and upgrades facilities to meet current standards. Restoration consists of repair and replacement work to fix facilities degraded due to the effects of aging and inadequate sustainment funding for a number of years. Modernization supports upgrade of facilities to meet current codes, accommodate new functions, and/or replace building components that exceed the overall service life of the facilities.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Recapitalization Deficit R&M									23.793	66.987	66.271	
Description: Provides facility restoration for facilities not specifically aligned to specified Facility Investment Strategy focus areas. Funds facilities quality improvement required to achieve elimination of Q4/Q3 Installation Status Report (ISR) rated facilities. In addition to major renovation costs, facility costs include project tails in accordance with AR 420-1 for: National Environmental Policy Act (NEPA) compliance.												
FY 2018 Plans: Provide year one of the Headquarters, Department of the Army (HQDA) approved 15-Year Investment Plan. FY18 resource increase supported Bucholz Airfield repavement project; a 3-year phased project supporting both Airfields on Kwajalein and Roi Namur. This project will remove and reconstruct failed pavement and replace with new asphalt concrete and portland cement concrete to restore the airfield to condition requirements of Army Regulation 420-72 and the structural requirements of current and projected mission traffic. Supporting facilities include airfield lighting, pavement marking, radio beacon and shelter, two backup generators, and site preparation work.												
FY 2019 Plans: Continue to provide (2nd year) resources against the HQDA-approved 15 year investment plan and focuses on Phase II of the Bucholz Army Airfield runway. Efforts will include repairing 1000 feet on both ends of the runway down to subgrade, resurface center section of runway, repair aged and deteriorating airfield pavements to include airfield lighting and back up generator.												
FY 2018 to FY 2019 Increase/Decrease Statement: Change accommodates varying annual workloads and associated costs.												
Accomplishments/Planned Programs Subtotals									23.793	66.987	66.271	

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Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DW9 / Army Kwajalein Atoll Restoration And Modernization
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll				Project (Number/Name) DX2 / Army Kwajalein Test Ranges and Mission Support			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
DX2: Army Kwajalein Test Ranges and Mission Support	-	64.512	10.891	10.676	-	10.676	10.903	11.552	11.732	11.888	0.000	132.154
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning in FY 2018, funds for Operations and Mission Support functions at Ronald Reagan Ballistic Missile Defense Test Site are realigned from Project DX2 to PE 0606002A (Ronald Reagan Ballistic Missile Defense Test Site) / Project XW9 (Reagan Test Site).

A. Mission Description and Budget Item Justification

Beginning in FY 2018, this Project funds Network Enterprise Technology Command (NETCOM) installation management-related Command, Control, Communications, Computers, and Information Management (C4IM) services at Army Kwajalein Test Ranges. Funds for operational and mission support functions at Ronald Reagan Ballistic Missile Defense Test Site are realigned to PE 0606002A (Ronald Reagan Ballistic Missile Defense Test Site) / Project XW9 (Reagan Test Site).

NETCOM utilizes this Project to provide civilian pay, manpower service contracts, supporting Information technology (IT) equipment, and associated costs specifically identified and measurable to plan, manage, coordinate, and execute Information Technology Services Management at Army Kwajalein Test Ranges. Project provides C4IM services in accordance with the Department of Army Pamphlet (DA PAM) PAM 25-1-1 and the Army C4IM Services List. Provides Base Communications Support (Service 701), Visual Information (Service 702), Information Assurance (Service 703), and Automation (Service 700). Includes the delivery of services consisting of secure and non-secure fixed voice communications, wireless voice, data and video connectivity services, and studio video conferencing services. Provides infrastructure support, including the design, installation, and maintenance of special circuits/systems in support of life safety/security systems and monitoring/control systems. Provides Collaboration and Messaging Services including services and tools for workforce to communicate and share information. Provides Application and Web-hosting including operation and management services required to support web and application hosting. Provides Desktop Management Support including management and support for end-user hardware and software services and tools. Includes Service Desk Support, Continuity of Operations, and Disaster Recovery support.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Civilian Pay (RTS)	5.318	-	-
Description: Funding covers civilians to perform management oversight of Army and DoD Missile Test programs.			
Title: Temporary Duty (TDY)/Training/Supplies - Military and Civilian	0.866	-	-
Description: Funding will provide for travel and training for civilians and military to assist in the testing of the Army and DoD Missile system Programs.			
Title: Outside Obligations/Other Government Agencies	5.592	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DX2 / Army Kwajalein Test Ranges and Mission Support		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Description: Funding provided to other Government Agencies for reimbursable-type work efforts				
Title: Fiber Optic Cable provides lease cost for Fiber Optic Cable between Kwajalein and Guam Description: Fiber Optic Cable is Provides lease cost for Fiber Optic Cable between Kwajalein and Guam.		10.599	-	-
Title: RTS Contractor Prime Pay (KRS) Description: Provide funding for Prime contractor to perform technical Operation and Maintenance support to support test and space missions.		20.983	-	-
Title: Contractor Material Description: Provide for materials to maintain range capabilities and support test operations.		0.685	-	-
Title: Federally Funded Research and Development Centers (FFRDC) Contractor Pay (MIT/LL) Description: Provide for technical expertise to RTS leadership for the overall performance of Range Operations.		5.775	-	-
Title: Contractor Pay Meteorological Description: Provide capability for weather sensing capability which allows for test planning and execution of the program.		1.895	-	-
Title: Ground Transportation Description: Provide transportation of material and passenger between Kwajalein and CONUS.		0.446	-	-
Title: Mission Specific Environmental Description: Ensures Range Readiness and all regulatory environmental requirements are compliant with range and test requirements.		0.591	-	-
Title: Network Enterprise Technology Command (NETCOM) C4IM Description: Provides Army civilian pay, manpower service contracts, supporting IT equipment, and associated costs specifically identified and measurable to plan, manage, coordinate, and execute Information Technology Services Management. FY 2018 Plans: Provide Department of Army civilian pay, manpower service contracts, supporting IT equipment, and associated costs specifically identified and measurable to plan, manage, coordinate, and execute Information Technology Services Management.		11.380	10.891	10.676

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DX2 / Army Kwajalein Test Ranges and Mission Support		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Provide Command, C4IM services in accordance with the DA PAM 25-1-1 and the Army C4IM Services List. Provide Base Communications Support (Service 701), Visual Information (Service 702), Information Assurance (Service 703), and Automation (Service 700). Delivery services consisting of secure and non-secure fixed voice communications, wireless voice, data and video connectivity services, and studio video conferencing services. Provide infrastructure support, including the design, installation, and maintenance of special circuits/systems in support of life safety/security systems and monitoring/control systems. Provide Collaboration and Messaging Services including services and tools for workforce to communicate and share information. Provide Application and Web-hosting including operation and management services required to support web and application hosting. Provide Desktop Management Support including management and support for end-user hardware and software services and tools, to include Service Desk Support, Continuity of Operations, and Disaster Recovery support. FY 2019 Plans: Provide Department of Army civilian pay, manpower service contracts, supporting IT equipment, and associated costs specifically identified and measurable to plan, manage, coordinate, and execute Information Technology Services Management. Provide Command, C4IM services in accordance with the DA PAM 25-1-1 and the Army C4IM Services List. Provide Base Communications Support (Service 701), Visual Information (Service 702), Information Assurance (Service 703), and Automation (Service 700). Delivery services consisting of secure and non-secure fixed voice communications, wireless voice, data and video connectivity services, and studio video conferencing services. Provide infrastructure support, including the design, installation, and maintenance of special circuits/systems in support of life safety/security systems and monitoring/control systems. Provide Collaboration and Messaging Services including services and tools for workforce to communicate and share information. Provide Application and Web-hosting including operation and management services required to support web and application hosting. Provide Desktop Management Support including management and support for end-user hardware and software services and tools, to include Service Desk Support, Continuity of Operations, and Disaster Recovery support. FY 2018 to FY 2019 Increase/Decrease Statement: Inflation rate adjustment.					
Title: Army Contracting Command (ACC) Support			0.382	-	-
Description: Contracting support to administer contract vehicle for NETCOM responsibilities at Army Kwajalein Test Ranges.					
Accomplishments/Planned Programs Subtotals			64.512	10.891	10.676
C. Other Program Funding Summary (\$ in Millions)					
N/A					
Remarks					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605301A / Army Kwajalein Atoll	Project (Number/Name) DX2 / Army Kwajalein Test Ranges and Mission Support
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605326A / Concepts Experimentation Program							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	24.668	29.820	30.430	-	30.430	61.024	60.790	61.948	65.663	0.000	334.343
312: Army/Joint Experimentation	-	0.312	7.099	6.534	-	6.534	7.725	7.887	8.051	8.218	0.000	45.826
317: Current Force Capability Gaps	-	22.864	20.898	22.244	-	22.244	51.387	50.951	51.906	55.413	0.000	275.663
33B: Soldier-Centered Analyses For Future Force	-	1.492	1.823	1.652	-	1.652	1.912	1.952	1.991	2.032	0.000	12.854

A. Mission Description and Budget Item Justification

The Army Concepts Experimentation Program Element (PE) supports current and future concepts and capabilities involving Soldiers and Leaders within live, virtual, and constructive environments by exploring concepts, capability requirements and solution across Doctrine, Organization, Training, Materiel, Leadership and Education, personnel, and Facilities (DOTMLPF) domains in order to learn and mitigate risk for current and future forces. Experiments and projects inform the Army future concepts and assess high-risk conceptual assumptions in order to focus required capabilities and represent the user's requirements in the future Army. Army experiments use the combined resources of Army battle laboratories, operational units, research labs, materiel developers, industry and academia to collaborate in the development, refinements, and assessment of future force concepts - to inform capability developments and validate concepts for current and future force. Simulated Experiments (SIMEX) will integrate and assess Army Concepts, Force Designs phases, with Army level issues across the breadth of a campaign that highlights validation and integration of Force 2025 outcomes.

Enables Army Training and Doctrine Command (TRADOC) Capability Development and Integration Directorates (CDID)/TRADOC Capability Managers (TCM) Joint Capabilities Integration and Development System (JCIDS) development to support Program Executive Offices (PEOs) and Program Managers (PMs) for acquisition milestone decisions. The Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)) organizational community of PEOs/PMs supplemented manpower shortfalls to TRADOC for many years. This was necessary to ensure work affecting their materiel development programs, specifically the mandated JCIDS process necessary for Milestone acquisition Army Requirements Oversight Council/Joint Requirements Oversight Council (AROC/JROC) decisions, was executed in a timely manner. Funding ensures TRADOC acts independently as the voice of the warfighter, the user, in complement with the materiel developer in providing total capability management including integration of all DOTMLPF consideration for warfighting functional areas. Provides for TRADOC to serve as the lead for Accelerated Capability Development (ACD) to address current critical operational needs enabling development and deployment/employment of accelerated capabilities (both materiel and non-materiel) to the current force. Early Synthetic Prototyping enables wargaming, experimentation capability that engages soldiers across the Army through early-fidelity game environments to gain their insights and recommendations in the development of future doctrine, organization, and materiel solutions. Enables TRADOC to serve as the central coordinating organization for Headquarters Department of the Army (HQDA) staff support requirements related to accelerated capabilities developments and integrate accelerated capabilities development activities between proponent force modernization domains to include Joint/Service coordination. Provides Army Warfighter Assessments (AWA), which will allow TRADOC to physically integrate, assess and evaluate the network, capability sets and other adaptive capabilities to accelerate the systems acquisition process of providing DOTMLPF recommendations to the Army. Provides support to the Army Warfighting Challenges (AWFC) that are used by the Army to frame learning and collaboration.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>

The Soldier-Centered Analysis For Future Force will provide early application of human performance and human figure modeling tools in the development of Soldier-focused requirements to shape technology for Future Force development. Design analyses, constructive simulations and Soldier-in-the loop assessments will ensure that manpower requirements and workload and skill demands are considered to avoid information and physical task overloads, and take optimum advantage of aptitudes, individual and collective training, and numbers of Soldiers for an affordable Future Force.

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	25.596	29.820	35.321	-	35.321
Current President's Budget	24.668	29.820	30.430	-	30.430
Total Adjustments	-0.928	0.000	-4.891	-	-4.891
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.916	-			
• Adjustments to Budget Years	-	-	-4.891	-	-4.891
• FFRDC Transfer	-0.012	-	-	-	-

Change Summary Explanation

The FY 2019 funding request was reduced by \$3.961 million to account for the availability of prior year execution balances. Additional reductions represent revised economic assumptions and civilian pay adjustments.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605326A / Concepts Experimentation Program				Project (Number/Name) 312 / Army/Joint Experimentation			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
312: Army/Joint Experimentation	-	0.312	7.099	6.534	-	6.534	7.725	7.887	8.051	8.218	0.000	45.826
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Army / Joint Experimentation supports current and future concepts and capabilities involving Soldiers and Leaders within live, virtual, and constructive environments by exploring concepts, capability requirements and solutions across Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) domains in order to learn and mitigate risk for current and future forces. Experiments inform Army future concepts and assess high-risk conceptual assumptions in order to focus required capabilities and represent the user's requirements in the future Army. Army experiments use the combined resources of Army battle laboratories, operational units, research labs, materiel developers, industry and academia to collaborate in the development, refinements, and assessment of future force concepts - to inform capability developments and validate concepts for current and future force. Since FY 2015 this Project has supported the Army's Simulated Experiments (SIMEX) to integrate and assess Army Force 2025 and Beyond (F2025B) Concepts, Capabilities, Force Designs, Operational and Organizational Plans in the near (2014-2020), mid (2020-2030) and far (2030-2040) term.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Experimentation - High-Fidelity Live-Virtual-Constructive Experiments									0.312	7.099	6.534	
Description: Experiments address concept and capability developments including integration of capabilities for all Brigade Combat Team (BCT) types; development of future DOTMLPF requirements and solutions; and acceleration and integration of capabilities for current force BCTs and above brigade.												
FY 2018 Plans:												
Enables the Army to conduct early fidelity exploration of Doctrine, Organization and Materiel solution through exposure of Soldiers to new innovative ideas and material. Establishes a continuing collaboration, feedback, and electronic analytical collection capability which captures, through simulated application of future force prototype concepts, explicit qualitative feedback of Soldiers experience gathered from simulated environments intertwined with surveys, polls, and discussion boards. Directed SIMEX leverage unique support analytics which capture Soldier and Team interaction during virtual small unit, first-person operating environment events from shooter engagements to high tempo teaming events which will become the focus to integrate and assess Army Concepts, Force Designs, and Capabilities to support Force 2025B Maneuvers to develop, refine, and validate prerequisite Force 2025 and Beyond Concepts, Operational and Organization Plans, and DOTMLPF solutions to achieve the vision of the Army's Force in the near (2014-2020), mid (2020-2030)((and far (2030-2040) terms. Empowers participants to explore innovative techniques and participate in equipment and material design options which enables the Maneuver Battle Lab to be innovative in partnering with Department of Defense (DoD) Research and Development organizations in the development of solutions to Army Warfighting Challenges that would be assessed through Army Experimentation assessments. Leverages												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>	Project (Number/Name) 312 / <i>Army/Joint Experimentation</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
design of a high echelon, strategy environment which examines how units organize and employ future capabilities on the battlefield. The Army Capabilities Integration Center (ARCIC) continues, through a distributive network capability to support the Army Level Acquisition Design and merge with the Experimentation Mission while leveraging and sharing the expense of the Battle Labs to interject a new dynamic interactive process into proponent mission to engage Soldiers to select academia and industry solutions into a research opportunity through virtual exploration of the introduced concepts and equipment throughout a simulated operational environment selected from any location in the world. As Soldiers explore new ideas, concepts, material, and doctrine, they employ new techniques in coordination with the development of requirements documents provide improved insight to environment solutions to techniques and material during the conceptual development stage rather than post construction. FY 2019 Plans: Experiments will address concept and capability developments including integration of capabilities for all BCT types; development of future DOTMLPF requirements and solutions; and acceleration and integration of capabilities for current force BCTs and above brigade. FY 2018 to FY 2019 Increase/Decrease Statement: Revised economic assumptions.			
Accomplishments/Planned Programs Subtotals		0.312	7.099
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>				Project (Number/Name) 317 / <i>Current Force Capability Gaps</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
317: <i>Current Force Capability Gaps</i>	-	22.864	20.898	22.244	-	22.244	51.387	50.951	51.906	55.413	0.000	275.663
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project enables Army Capability Development and Integration Programs through TRADOC/ARCIC Capability Managers (TCM) to implement the Joint Capabilities Integration and Development System (JCIDS) in support of Program Executive Offices (PEOs) and Program Managers (PMs) for acquisition milestone decisions. The Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)) requires mandated work enabling their materiel development programs, specifically the mandated JCIDS process necessary for Milestone acquisition AROC/JROC decisions, executed in a timely manner. Funding ensures TRADOC acts independently as the voice of the warfighter, the user, in complement with the materiel developer in providing total capability management including integration of all doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) consideration for warfighting functional areas. Provides for TRADOC to execute its assigned responsibilities as the lead for Accelerated Capability Development (ACD) to address current critical operational needs enabling development and deployment/employment of accelerated capabilities (both materiel and non-materiel) to the current force. Supports critical research, development, test, and evaluation for Early Synthetic Prototyping enables wargaming, experimentation capability that engages soldiers across the Army through early-fidelity game environments to gain their insights and recommendations in the development of future doctrine, organization, and materiel solutions. Enables TRADOC execution of its responsibilities as central coordinating organization for Headquarters Department of the Army (HQDA) staff support requirements related to accelerated capabilities developments. Integrate accelerated capabilities development activities between proponent force modernization domains to include Joint/Service coordination. Provides Army Warfighter Assessments (AWA), which will allow TRADOC to physically integrate, assess and evaluate the network, capability sets and other adaptive capabilities to accelerate the systems acquisition process of providing DOTMLPF recommendations to the Army. Provides support to the Army Warfighting Challenges (AWFC) that are used by the Army to frame learning and collaboration.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: CDID/TCM Joint Capabilities Integration and Development System (JCIDS) Development in support of PEOs and PMs for acquisition milestone decisions.	20.864	-	-
Description: Funding ensures TRADOC acts independently as the voice of the warfighter, the user, in complement with the materiel developer in providing total capability management including integration of all DOTMLPF considerations for warfighting functional areas.			
Title: Accelerated Capabilities Initiatives in support of Force 2025 and Beyond	2.000	-	-
Description: Accelerated Capabilities Initiatives in support of Force 2025 and Beyond.			
Title: Joint Warfighting Assessments (Executed as part of NIE '1' Events)	-	2.085	2.118

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>	Project (Number/Name) 317 / <i>Current Force Capability Gaps</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
FY 2018 Plans: Support Joint Expeditionary Maneuver and Entry Operations, Set the Theater, Special Operations Forces/Coalition Forces Interoperability, Air-Ground Reconnaissance and Security, Joint/Multinational Operations, Sea Basing/Joint Logistics Over the Shore (JLOTS), Mobile Command Posts (Expeditionary), Man Unmanned Teaming, (Ground/Air) (MUM-T), Accelerated Capabilities Developments, Early Synthetic Prototyping and Architecture Army Warfighting Assessments (AWA). FY 2019 Plans: Support Joint Expeditionary Maneuver and Entry Operations, Set the Theater, Special Operations Forces/Coalition Forces Interoperability, Air-Ground Reconnaissance and Security, Joint/Multinational Operations, Sea Basing/Joint Logistics Over the Shore (JLOTS), Mobile Command Posts (Expeditionary), Man Unmanned Teaming, (Ground/Air) (MUM-T), Accelerated Capabilities Developments, Early Synthetic Prototyping and Architecture Army Warfighting Assessments (AWA). FY 2018 to FY 2019 Increase/Decrease Statement: Revised economic assumptions.				
Title: Accelerated Capabilites Development FY 2018 Plans: Provide for TRADOC to serve as the lead Accelerated Capability Development to address current critical operational needs in enabling development and deployment/employment of accelerated capabilities (both materiel and non-materiel) to the current force. Serve as TRADOC central coordinating organization for Headquarters Department of the Army HQDA staff support requirements related to accelerated capabilities developments. Integrate ACD activities to ensure unity and priority of effort and synchronization and optimization of resources. Integrate accelerated capabilities development activities between proponent force modernization domains to include Joint/Service coordination. FY 2019 Plans: Provide for TRADOC to serve as the lead Accelerated Capability Development to address current critical operational needs in enabling development and deployment/employment of accelerated capabilities (both materiel and non-materiel) to the current force. Serve as TRADOC central coordinating organization for Headquarters Department of the Army HQDA staff support requirements related to accelerated capabilities developments. Integrate ACD activities to ensure unity and priority of effort and synchronization and optimization of resources. Integrate accelerated capabilities development activities between proponent force modernization domains to include Joint/Service coordination. FY 2018 to FY 2019 Increase/Decrease Statement: Revised economic assumptions.		-	1.520	1.544
Title: CDID/TCM JCIDS Requirements Documentation		-	15.281	16.538

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>		Project (Number/Name) 317 / <i>Current Force Capability Gaps</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Description: In Fiscal Year 2014 the TRADOC Capability Development Integration Directorate (CDID) Capability Manager began finalizing a transfer of JCIDS Requirements Documentation Mission responsibility from the Assistant Secretary of the Army for Acquisition, Logistics, and Technology. This activity provides essential Joint Capabilities Integration and Development System Requirements Documentation. FY 2018 Plans: Ensure TRADOC acts independently as the voice of the warfighter, the user, in complement with the materiel developer in providing total capability management including integration of all DOTMLPF consideration for warfighting functional areas. FY 2019 Plans: Ensure TRADOC acts independently as the voice of the warfighter, the user, in complement with the materiel developer in providing total capability management including integration of all DOTMLPF consideration for warfighting functional areas. FY 2018 to FY 2019 Increase/Decrease Statement: Revised economic assumptions.					
Title: ArCADIE New Requirements Description: Army Capability-based Architecture Development and Integration Environment (ArCADIE) is the Army's authoritative source for architecture data and supports the community of practice requirement. ArCADIE provides a robust collaborative and common enterprise environment for architecture-related efforts in support of critical institutional processes throughout the TRADOC Centers of Excellence and Army/Joint/DOD partners. Offers a single, federated web-based environment for the development and discovery of integrated architectures across warfighting functions, and organizations throughout the Army Enterprise. FY 2018 Plans: Enable ARCIC to maintain ArCADIE and develop, verify, and validate operational architecture for 8 major BCT formations. Provide storage, accessibility, production, and certification of authoritative architecture data and supporting systems in accordance with DoD and DA information Assurance and management standards. FY 2019 Plans: Enable ARCIC to maintain ArCADIE and develop, verify, and validate operational architecture for 8 major BCT formations. Provide storage, accessibility, production, and certification of authoritative architecture data and supporting systems in accordance with DoD and DA information Assurance and management standards. FY 2018 to FY 2019 Increase/Decrease Statement:			-	2.012	2.044

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605326A / Concepts Experimentation Program		Project (Number/Name) 317 / Current Force Capability Gaps
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Revised economic assumptions.				
Accomplishments/Planned Programs Subtotals		22.864	20.898	22.244
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				
E. Performance Metrics				
N/A				

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>				Project (Number/Name) 33B / <i>Soldier-Centered Analyses For Future Force</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
33B: <i>Soldier-Centered Analyses For Future Force</i>	-	1.492	1.823	1.652	-	1.652	1.912	1.952	1.991	2.032	0.000	12.854
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project will provide early application of human performance and human figure modeling tools in the development of Soldier-focused requirements to shape technology for Future Force development. Design analyses, constructive simulations and Soldier-in-the-loop assessments will ensure that manpower requirements and workload and skill demands are considered to avoid information and physical task overloads, and take optimum advantage of aptitudes, individual and collective training, and numbers of Soldiers for an affordable Future Force. The cited work is consistent with the Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Defense Technology Area Plan (DTAP). Work in this Project is performed by the Army Research Laboratory (ARL).

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Manpower and Personnel Integration (MANPRINT)	1.492	1.823	1.652
Description: Provide dedicated modeling and analysis cell for early and accurate MANPRINT estimates to Army Materiel Command (AMC), Research, Development, and Engineering Command (RDECOM) and its Research, Development, and Engineering Centers (RDECs), Training and Doctrine Command (TRADOC) Centers, Schools and Centers of Excellence (CoEs), Army Test and Evaluation Command (ATEC) and other service laboratories.			
FY 2018 Plans: Perform verification and validation of fixed-heel point accommodation model that will enable early assessment of driver's crew station designs for future combat vehicles; develop human figure modeling methodology for determining seat placement of encumbered manikin sets for improved assessment of future aviation and ground platforms; develop rapid modeling technique incorporating portable handheld laser scanning technology and point cloud reduction software to construct vehicle models compatible with human figure modeling analysis to support the Route Clearance Interrogation System (RCIS) program; conduct an analysis into the Army's Preventative Maintenance Checks and Services (PMCS) process to identify Human System Integration issues; develop algorithms to automate the PMCS level ten process, conduct experiments to demonstrate that the PMCS process can be automated resulting in a reduction of training requirements, entry errors to Global Combat Support System (GCSS)-Army, incorrect maintenance work orders, incorrect parts order, and significant reduction in maintenance man hours to perform the PMCS mission; and improve the accuracy of threat prediction algorithm to support command mission planning and course of action analyses. Develop Apps to support anthropometric data collection and analysis.			
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>	Project (Number/Name) 33B / <i>Soldier-Centered Analyses For Future Force</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Will develop cognitive workload models to assess next-generation combat vehicle (NGCV) crewman ability to control multiple unmanned assets in a combined Manned-Unmanned Teaming (MuM-T) environment to allow crewman to think and act decisively to shoot, move and communicate more effectively. Will collect dynamic motion data for NGCV crewman and format motion data for input into computer-assisted design (CAD) models to determine if proper crew offset exists in the design to minimize risk of injury. Will incorporate scanned human body shape geometry into current 3D human figure boundary manikin models for improved analysis capability to shape technology for NGCV. <i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> FY 2019 adjustment reflects decrease for civilian labor and associated travel, training and supplies.				
Accomplishments/Planned Programs Subtotals		1.492	1.823	1.652
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				
E. Performance Metrics				
N/A				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605502A / <i>Small Business Innovation Research</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	230.691	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	230.691
861: <i>SMALL BUS TECH - AMC</i>	-	28.441	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	28.441
M40: <i>SMALL BUSINESS-AMC</i>	-	202.250	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	202.250

Note

The Small Business Innovation Research (or SBIR) program is a United States Government program, coordinated by the Small Business Administration, in which 3.2% of the total extramural research budgets of all federal agencies with extramural research budgets in excess of \$100 million are reserved for contracts or grants to small businesses. A similar program, the Small Business Technology Transfer Program (STTR), uses a similar approach to the SBIR program to expand public/private sector partnerships between small businesses and nonprofit U.S. research institutions, and is funded at present at .45% of the relevant agencies' extramural research budgets.

A. Mission Description and Budget Item Justification

There is no Fiscal Year 2019 budget programming for Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR). Funds for SBIR / STTR are redistributed in the year of execution from across the Army Research, Development, Test & Evaluation portfolio.

The Small Business Innovation Research (SBIR) program is a United States Government program, coordinated by the Small Business Administration, in which 3.2% of the total extramural research budgets of all federal agencies with extramural research budgets in excess of \$100 million are reserved for contracts or grants to small businesses. A similar program, the Small Business Technology Transfer Program (STTR), uses a similar approach to the SBIR program to expand public/private sector partnerships between small businesses and nonprofit U.S. research institutions, and is currently funded at .45% of the relevant agencies' extramural research budgets.

This Program Element is used exclusively to account for SBIR / STTR program funding in the year of execution.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	230.691	0.000	0.000	-	0.000
Total Adjustments	230.691	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	230.691	-			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605502A / <i>Small Business Innovation Research</i>	
<u>Change Summary Explanation</u> Fiscal Year 2017 adjustments represent internal Army reprogrammings (\$230.691 Million) to support Small Business Innovation Research.		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605502A / Small Business Innovation Research				Project (Number/Name) 861 / SMALL BUS TECH - AMC			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
861: SMALL BUS TECH - AMC	-	28.441	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	28.441
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Small Business Innovation Research (SBIR) program is a United States Government program, coordinated by the Small Business Administration, in which 3.2% of the total extramural research budgets of all federal agencies with extramural research budgets in excess of \$100 million are reserved for contracts or grants to small businesses. A similar program, the Small Business Technology Transfer Program (STTR), uses a similar approach to the SBIR program to expand public/private sector partnerships between small businesses and nonprofit U.S. research institutions, and is funded at present at .45% of the relevant agencies' extramural research budgets.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605502A / <i>Small Business Innovation Research</i>				Project (Number/Name) M40 / <i>SMALL BUSINESS-AMC</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M40: <i>SMALL BUSINESS-AMC</i>	-	202.250	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	202.250
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Small Business Innovation Research (or SBIR) program is a United States Government program, coordinated by the Small Business Administration, in which 3.2% of the total extramural research budgets of all federal agencies with extramural research budgets in excess of \$100 million are reserved for contracts or grants to small businesses. A similar program, the Small Business Technology Transfer Program (STTR), uses a similar approach to the SBIR program to expand public/private sector partnerships between small businesses and nonprofit U.S. research institutions, and is funded at present at .45% of the relevant agencies' extramural research budgets.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605601A / <i>Army Test Ranges and Facilities</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	305.238	307.588	305.759	-	305.759	313.316	324.551	316.176	316.361	0.000	2,188.989
F30: <i>Army Test Ranges & Facilities</i>	-	305.238	307.588	305.759	-	305.759	313.316	324.551	316.176	316.361	0.000	2,188.989

Note

Beginning in Fiscal Year (FY) 2017, this Program Element (PE) funds labor for physical security civilian guards and equipment as well as the UH-60 helicopters. Beginning in FY18, this PE will fund the Network Enterprise Center (NEC), Computer Network Defense Service Provider (CNDSP), and airfield operations, which were previous funded by the Operations and Maintenance - Army (OMA) appropriation.

A. Mission Description and Budget Item Justification

This Program Element (PE) provides the institutional funding required to operate test activities, in accordance with Public Law 107-314 Section 232 in support of Department of Defense (DoD) Program Executive Officers, Program and Product Managers, and Research, Development, and Engineering Centers. Resources provided by this project operate six elements of the DoD Major Range and Test Facility Base (MRTFB): White Sands Test Center (WSTC), White Sands Missile Range, New Mexico; Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; Electronic Proving Ground (EPG), Fort Huachuca, Arizona; and Yuma Test Center (YTC), Yuma Proving Ground, Arizona; Cold Regions Test Center (CRTC), Fort Greely, Alaska; and Tropic Regions Test Centers (TRTC) at various locations. This PE also funds the Army's test capability at Redstone Test Center (RTC), Redstone Arsenal, Alabama.

This PE finances the overhead (institutional) test operating costs not billable to DoD test customers per Department of Defense Instruction (DODI) 3200.18 and Department of Defense Financial Management Regulation (DODFMR) 7000.14-R, which include recurring test infrastructure/capability sustainment requirements, replacement of test equipment, test operating procedures, and test revitalization/upgrade projects to maintain \$5,500 Million of testing capabilities and improvements to safety, environmental protection, efficiency of test operations, and technological advances. The test capabilities at these ranges have been uniquely established, are in place to support test and evaluation (T&E) requirements of funded weapons programs, and are required to assure technical performance, adherence to safety requirements, reliability, logistics supportability, Title 10 Live Fire Test and Evaluation, transportability, environmental effects, cyber, electromagnetic effects, and quality of materiel in development and in production.

This PE sustains the T&E capability required to support Army as well as Joint Service or Other Service systems, materiel, and technologies. Types of systems scheduled for testing include: Aircraft, Air Delivery, Unmanned Aerial Systems, Unmanned Ground Vehicles, Air and Missile Defense Systems, Engineering Equipment, Direct fire, Indirect fire, Nonlethal weapons, Ammunition, Automotive Systems, Intelligence Surveillance and Reconnaissance, Ground Soldier System, Missiles, Rockets, Mission Command Network, and Tactical Command, Control, and Communication.

Specific systems supported in Fiscal Year (FY) 2018 with continued support in FY 2019 include: Network Integration Evaluation (NIE), Joint Light Tactical Vehicle (JLTV), Stryker (ECP, 30mm, ICV), Common Missile Warning System, Rifleman Radio, Joint Assault Bridge, Warfighter Information Network Tactical (WIN-T), AN/TPQ53 Radar, Distributed Common Ground Sensor - Army (DCGS-A), Patriot Advanced Capability-3 (PAC-3), Joint Air-to-Ground Missile, Army Integrated Air and

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605601A / <i>Army Test Ranges and Facilities</i>

Missile Defense (AIAMD), M109A7 Family of Vehicles, XM25 Counter Defilade Target Engagement (CDTE), Black Hawk, Gray Eagle Extended Range Handheld, Manpack and Small Form Fit (HMS) Man Pack Radio, Soldier Protective System, M829E4 120MM Advanced Kinetic Energy, Precision Guidance Kit (PGK), Marine Corp Amphibious Combat Vehicle.

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	307.882	307.588	313.280	-	313.280
Current President's Budget	305.238	307.588	305.759	-	305.759
Total Adjustments	-2.644	0.000	-7.521	-	-7.521
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.808	-			
• Adjustments to Budget Years	0.200	-	-7.521	-	-7.521
• FFRDC Transfer	-0.036	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605601A / Army Test Ranges and Facilities				Project (Number/Name) F30 / Army Test Ranges & Facilities			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
F30: Army Test Ranges & Facilities	-	305.238	307.588	305.759	-	305.759	313.316	324.551	316.176	316.361	0.000	2,188.989
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides the institutional funding required to operate test activities, in accordance with Public Law 107-314, Section 232 required by Department of Defense (DoD) Program Executive Officers, Program and Product Managers, and Research, Development, and Engineering Centers. Resources provided by this project operate six elements of the DoD Major Range and Test Facility Base (MRTFB): White Sands Test Center (WSTC), White Sands Missile Range, New Mexico; Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; Electronic Proving Ground (EPG), Fort Huachuca, Arizona; and Yuma Test Center (YTC), Yuma Proving Ground, Arizona; Cold Regions Test Center (CRTC), Fort Greely, Alaska; and Tropic Regions Test Centers (TRTC) at various locations. This PE also funds the Army's test capability at Redstone Test Center (RTC), Redstone Arsenal, Alabama.

This Project finances the overhead (institutional) test operating costs not billable to DoD test customers per Department of Defense Instruction (DODI) 3200.18 and Department of Defense Financial Management Regulation (DODFMR) 7000.14-R, which include recurring test infrastructure/capability sustainment requirements, replacement of test equipment, test operating procedures, and test revitalization/upgrade projects to maintain \$5500 million of testing capabilities and improvements to safety, environmental protection, efficiency of test operations, and technological advances. The test capabilities at these ranges have been uniquely established, are in place to support test and evaluation (T&E) requirements of funded weapons programs, and are required to assure technical performance, adherence to safety requirements, reliability, logistics supportability, Title 10 Live Fire Test and Evaluation, transportability, environmental effects, electromagnetic effects, and quality of materiel in development and in production.

This Project sustains the T&E capability required to support Army as well as Joint Service or Other Service systems, materiel, and technologies. Types of systems scheduled for testing include: Aircraft, Air Delivery, Unmanned Aerial Systems, Unmanned Ground Vehicles, Air and Missile Defense Systems, Engineering Equipment, Direct fire, Indirect fire, Nonlethal weapons, Ammunition, Automotive Systems, Intelligence Surveillance and Reconnaissance, Ground Soldier System, Missiles, Rockets, Mission Command Network, and Tactical Command, Control, and Communication.

Specific systems supported in FY18 with continued support in FY19 include: Network Integration Evaluation (NIE), Joint Light Tactical Vehicle (JLTV), Stryker (ECP, 30mm, ICV), Common Missile Warning System, Rifleman Radio, Joint Assault Bridge, Warfighter Information Network Tactical (WIN-T), AN/TPQ53 Radar, Distributed Common Ground Sensor - Army (DCGS-A), Patriot Advanced Capability-3 (PAC-3), Joint Air-to-Ground Missile, Army Integrated Air and Missile Defense (AIAMD), M109A7 Family of Vehicles, XM25 Counter Defilade Target Engagement (CDTE), Black Hawk, Gray Eagle Extended Range, Handheld, Manpack and Small Form Fit (HMS) Man Pack Radio, Soldier Protective System, M829E4 120MM Advanced Kinetic Energy, Precision Guidance Kit (PGK), Marine Corp Amphibious Combat Vehicle.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605601A / Army Test Ranges and Facilities	Project (Number/Name) F30 / Army Test Ranges & Facilities		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Title: Mission Support Description: Funds support test equipment upgrades and maintenance; test facility maintenance; routine calibration; handling and disposal of hazardous materials, transportation, postage, administrative supplies; tools; software; spare parts; test support vehicle maintenance; mission unique installation costs; temporary duty/training of civilian and contractor personnel; printing and reproduction; communications; land leases; and range road maintenance. Funding supports indirect costs for MRTFB Activities (ATC, EPG, WSTC, YTC (including CRTC & TRTC)) in accordance with DODI 3200.18 and DODFMR 7000.14-R. FY 2018 Plans: Funds will continue to support test equipment upgrades and maintenance; test facility maintenance; routine calibration; handling and disposal of hazardous materials, transportation, postage, administrative supplies; tools; software; spare parts; test support vehicle maintenance; mission unique installation costs; temporary duty/training of civilian and contractor personnel; printing and reproduction; communications; land leases; and range road maintenance. Funding supports indirect costs for MRTFB Activities (ATC, EPG, WSTC, YTC (including CRTC & TRTC)) in accordance with DODI 3200.18 and DODFMR 7000.14-R. FY 2019 Plans: Funds will continue to support test equipment upgrades and maintenance; test facility maintenance; routine calibration; handling and disposal of hazardous materials, transportation, postage, administrative supplies; tools; software; spare parts; test support vehicle maintenance; mission unique installation costs; temporary duty/training of civilian and contractor personnel; printing and reproduction; communications; land leases; and range road maintenance. Funding supports indirect costs for MRTFB Activities (ATC, EPG, WSTC, YTC (including CRTC & TRTC)) in accordance with DODI 3200.18 and DODFMR 7000.14-R. FY 2018 to FY 2019 Increase/Decrease Statement: Minor change due to routine program adjustments.		93.678	80.601	78.649
Title: T&E Civilian Pay Description: This funding supports the overhead costs of the civilian labor for Program Budget Guidance (PBG) authorizations. The balance is customer funded. The test customer pays all direct costs that are directly attributable to the use of a test facility or resource for testing of a particular program. Funding is essential to maintain core T&E skills as part of the Government civilian workforce. FY 2018 Plans:		139.101	139.659	136.153

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605601A / Army Test Ranges and Facilities	Project (Number/Name) F30 / Army Test Ranges & Facilities		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Funds will continue to support the overhead costs of the civilian labor for PBG authorizations. The balance will be customer funded. The test customer will pay all direct costs directly attributable to the use of a test facility or resource for testing of a particular program. Funding will be essential to maintain core T&E skills as part of the Government civilian workforce. FY 2019 Plans: Funds will continue to support the overhead costs of the civilian labor for PBG authorizations. The balance will be customer funded. The test customer will pay all direct costs directly attributable to the use of a test facility or resource for testing of a particular program. Funding will be essential to maintain core T&E skills as part of the Government civilian workforce. FY 2018 to FY 2019 Increase/Decrease Statement: Increase due to inflation for civilian pay; the majority of the workforce is in the Acquisition Demonstration Program.				
Title: Contractor Support Description: This funding supports contractor labor costs not billable to the customer. Contract labor is essential to augment core civilian T&E personnel. Functions performed include range operations, automotive test support, radar maintenance, warehousing support, project management, maintenance of support fleet aircraft, recurring/general maintenance to test facilities and data acquisition support. FY 2018 Plans: Funds will continue to support contractor labor costs not billable to the customer. Contract labor will be essential to augment core civilian T&E personnel. Functions performed will include range operations, automotive test support, radar maintenance, warehousing support, project management, maintenance of support fleet aircraft, recurring/general maintenance to test facilities and data acquisition support. FY 2019 Plans: Funds will continue to support contractor labor costs not billable to the customer. Contract labor will be essential to augment core civilian T&E personnel. Functions performed will include range operations, automotive test support, radar maintenance, warehousing support, project management, maintenance of support fleet aircraft, recurring/general maintenance to test facilities and data acquisition support. FY 2018 to FY 2019 Increase/Decrease Statement: Increase due to inflation for contractor labor salary.		49.340	50.115	53.651
Title: Revitalization/Upgrade		5.233	5.000	5.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605601A / Army Test Ranges and Facilities	Project (Number/Name) F30 / Army Test Ranges & Facilities	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Description: Funds support the revitalization/upgrade of test infrastructure and capabilities. MRTFB elements are required to use institutional funding to sustain, upgrade or create capabilities that support multiple customers. Funding will be focused on improving test and evaluation capabilities for the highest priority Army programs. FY 2018 Plans: Funds will continue to support the revitalization/upgrade of test infrastructure and capabilities. MRTFB elements will be required to use institutional funding to sustain or upgrade capabilities that support multiple customers. Funding will be focused on improving test and evaluation capabilities for the highest priority Army programs. Anticipated for FY2018 are three projects; YTC High Speed Video Building; WSTC Munitions Management Facility Refurbishment; ATC Small Arms Environmental Conditioning Building. FY 2019 Plans: Funds will continue to support the revitalization/upgrade of test infrastructure and capabilities. MRTFB elements will be required to use institutional funding to sustain or upgrade capabilities that support multiple customers. Funding will be focused on improving test and evaluation capabilities for the highest priority Army programs.			
Title: Physical Security Guards and Equipment Description: This funding supports physical security guards mandated by regulation to guard Army Test and Evaluation Command's (ATEC's) Fast Burst Nuclear Reactor (FBR) at White Sands Missile Range (WSMR) in accordance with (IAW) Army Regulation (AR) 190-54 and Chemical Biological (CB) facilities located at Dugway Proving Ground (DPG) IAW AR 190-50 and AR 190-17. These surety facilities maintain nuclear, biological, and chemical (NBC) materials and agents in order to test the effects and effectiveness of defensive or protective equipment and measures. The physical security equipment consists of concrete barriers, security fencing around test sites, cameras, gate controllers, access and intrusion detection systems, alarms, and maintenance contracts for equipment. This equipment is necessary to secure arms rooms, ammunition storage facilities, The Fast Burst Nuclear Reactor and chemical biological surety sites. Physical security equipment is critical to maintain current security requirements as outlined in AR 190-17, AR 190-59, AR 190-51, and AR 190-13. FY 2018 Plans: Funds will support the physical security guards and equipment for the Fast Burst Nuclear Reactor at WSMR and Chemical Biological facilities at DPG. FY 2019 Plans:		12.279	12.438
			12.607

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605601A / Army Test Ranges and Facilities	Project (Number/Name) F30 / Army Test Ranges & Facilities		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Funds will support the physical security guards and equipment for the Fast Burst Nuclear Reactor at WSMR and Chemical Biological facilities at DPG.				
FY 2018 to FY 2019 Increase/Decrease Statement: Minor change due to routine program adjustments.				
Title: UH-60 Aircraft Description: This funding supports the Aviation Restructure Initiative endorsed by the SECDEF. Funding supports aircraft maintenance, aircrew labor, mandatory training, and aircraft flying hours. In accordance with DODI 3200.18 and DODFMR 7000.14-R, these costs are not billable to the test customers. UH-60 helicopters are used to provide essential logistical, sensor platform and aerial photo/video documentation support for developmental testing. FY 2018 Plans: Funds will support UH-60 helicopter maintenance, aircrew labor, mandatory training and aircraft flying hours. FY 2019 Plans: Funds will support UH-60 helicopter maintenance, aircrew labor, mandatory training and aircraft flying hours. FY 2018 to FY 2019 Increase/Decrease Statement: Minor change due to routine program adjustments.		5.607	7.004	7.144
Title: Network Enterprise Center Description: This funding supports the Network Enterprise Center (NEC) operations for WSTC and YTC. Funding supports manpower and contracts, support equipment and associated costs specifically identified and measurable to plan, manage, coordinate, and execute Communication, Network, and Information Technology Services Management. FY 2018 Plans: Funds will support all labor, support equipment, and training required for the Network Enterprise Center. FY 2019 Plans: Funds will support all labor, support equipment, and training required for the Network Enterprise Center. FY 2018 to FY 2019 Increase/Decrease Statement: Minor change due to routine program adjustments.		-	11.152	10.936
Title: Computer Network Defense Service Provider Description: This requirement supports compliance with Department of Defense Directive (DoDD) 8530.1, which directed that all component information systems and computer networks must enter into a service agreement with a CNDSP. United States		-	1.619	1.619

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605601A / <i>Army Test Ranges and Facilities</i>	Project (Number/Name) F30 / <i>Army Test Ranges & Facilities</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Army Cyber Command (ARCYBER) Operations Order (OPORD) 2014-224 directed all commands/Direct Reporting Units (DRU) to take immediate measures to ensure Army assets connected to Defense Research and Engineering Network (DREN) and Secure Defense Research and Engineering Network (SDREN) enclaves are aligned with the United States (US) Army Research Laboratory as their CNDSP to ensure cyber defense oversight and information security continuous monitoring going forward. FY 2018 Plans: Funds will support cyber defense oversight and continuous monitoring of information security. FY 2019 Plans: Funds will support cyber defense oversight and continuous monitoring of information security.			
Accomplishments/Planned Programs Subtotals		305.238	307.588
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605602A / Army Technical Test Instrumentation and Targets							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	70.523	49.242	62.379	-	62.379	50.257	51.595	52.975	54.137	0.000	391.108
628: Developmental Test Technology & Sustainment	-	61.011	33.948	45.625	-	45.625	33.498	34.357	35.267	36.060	0.000	279.766
62C: Modeling and Simulation Instrumentation	-	9.512	15.294	16.754	-	16.754	16.759	17.238	17.708	18.077	0.000	111.342

A. Mission Description and Budget Item Justification

This Program Element (PE) provides critical front-end investments for development of new test methodologies; test standards; advanced test technology concepts for long range requirements; future test capabilities; advanced development of Modeling and Simulation and Instrumentation (MS&I) prototypes; and the full development of test instrumentation for the United States Army Test and Evaluation Command (ATEC), which includes the Operational Test Command (OTC) at Ft Hood, Texas; Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; White Sands Test Center (WSTC) at White Sands Missile Range (WSMR), New Mexico; Electronic Proving Ground (EPG), Fort Huachuca, Arizona; Yuma Test Center (YTC) at Yuma Proving Grounds (YPG), Arizona (including the Cold Regions Test Center (CRTC), Fort Greely, Alaska and the Tropics Regions Test Center (TRTC), at various locations); and Redstone Test Center (RTC), Redstone Arsenal, Alabama. OTC consists of three forward Test Directorates (Airborne and Special Operations Test Directorate, Fort Bragg, North Carolina; Air Defense Artillery Test Directorate, Fort Bliss, Texas; and the Fires Test Directorate, Fort Sill, Oklahoma) together with four other Test Directorates (Aviation; Maneuver; Mission Command; Maneuver Support and Sustainment) at Ft Hood, Texas. These activities support the development and fielding cycle of all Army acquisition programs including rapid fielding initiatives. Sustainment funding maintains existing testing capabilities at all locations by replacing unreliable, uneconomical, and irreparable instrumentation, as well as incremental upgrades of hardware and software for MS&I systems to assure adequate test data collection capabilities. This data supports acquisition milestone decisions for all commodity areas throughout the Army including programs such as the Joint Light Tactical Vehicle (JLTV), Advanced Multi-Purpose Vehicle (AMPV), Network Integration Evaluation (NIE), Patriot Advance Capability Phase 3 (PAC-3), Warfighter Information Network - Tactical (WIN-T), Stryker, Bradley, Abrams, Guided Multiple Launch Rocket System (GMLRS), Joint Tactical Radio System (JTRS), and the Distributed Common Ground System - Army (DCGS-A).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		PE 0605602A / Army Technical Test Instrumentation and Targets			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	64.127	49.242	57.601	-	57.601
Current President's Budget	70.523	49.242	62.379	-	62.379
Total Adjustments	6.396	0.000	4.778	-	4.778
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	20.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.857	-			
• Adjustments to Budget Years	-11.723	-	4.778	-	4.778
• FFRDC Transfer	-0.024	-	-	-	-
Congressional Add Details (\$ in Millions, and Includes General Reductions)					
Project: 628: Developmental Test Technology & Sustainment					
Congressional Add: Program Increase (ATEC) / Cybersecurity of Space and Missile Defense Assets (SMDC)					
Congressional Add Subtotals for Project: 628					
Congressional Add Totals for all Projects					

FY 2017	FY 2018
20.000	-
20.000	-
20.000	-

FY 2017	FY 2018
20.000	-
20.000	-
20.000	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605602A / Army Technical Test Instrumentation and Targets				Project (Number/Name) 628 / Developmental Test Technology & Sustainment			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
628: Developmental Test Technology & Sustainment	-	61.011	33.948	45.625	-	45.625	33.498	34.357	35.267	36.060	0.000	279.766
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Fiscal Year 2017 Congressional Add (CA) includes a \$10 million program increase for Army Test and Evaluation Command Developmental Test Technology & Sustainment along with \$10 million for "Cybersecurity of space and missile defense assets." Cybersecurity CA funds are being utilized by Space and Missile Defense Command (SMDC) to develop test technologies and capabilities necessary to address developmental test needs. Specifically, SMDC will use these funds to develop three fundamental technologies: 1.) a system analysis tool capable of assessing vulnerabilities of SMDC key terrain, 2.) Cyber Operational Risk Tool Suite (CORTS) capabilities to test network robustness, and 3.) developing the necessary live, virtual, and constructive test environment as well as the capabilities for test controls.

A. Mission Description and Budget Item Justification

This Project provides critical front-end investments for development of new test methodologies, test standards, advanced test technology concepts for long range requirements, future test capabilities, and advanced instrumentation prototypes for subordinate commands of the Army Test and Evaluation Command (ATEC). These capabilities are required to support developmental testing requirements of high priority Army systems supporting Army modernization efforts. Where practical, efficiencies will be gained through the common use of developmental instrumentation in operational testing. A key element is sustaining aging instrumentation which maintains existing capabilities at test facilities by replacing unreliable, uneconomical and irreparable instrumentation, as well as lifecycle replacement and incremental upgrades of instrumentation and software, reducing their average age to assure adequate testing capabilities. This Project develops and sustains developmental test instrumentation and capabilities that provide the data necessary to support acquisition milestone decisions for all commodity areas throughout the Army. Significant examples include new instrumentation for the testing of Command, Control, Communication and Computer (C4) systems, upgrades to existing radars to extend their economic life, common data collection and analysis tools, non-intrusive instrumentation to test Unmanned Ground Vehicles and sensors, high speed - high definition digital imaging systems to capture missile flight events, and automation software to improve data collection of reliability, availability, and maintainability (RAM) testing.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Developmental Test Technology Investment	41.011	33.948	45.625
Description: Develops, acquires and sustains critical test technology and instrumentation. Provides the necessary test instrumentation, computer and communications systems, data collection, analysis and reporting equipment and other test capabilities to successfully develop and test Army weapons and equipment. Provides the necessary live, virtual and constructive environment, hardware-in-the-loop capabilities and models and simulations needed for testing the Army materiel. Acquires instrumentation to measure performance of C4 systems; RAM data collection on tracked and wheeled vehicles; ballistic transducers for measuring chamber pressures during ammunition tests; supports development of common data collection instrumentation and data management systems used in testing across all test commodity areas and test lifecycles; continues			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605602A / Army Technical Test Instrumentation and Targets		Project (Number/Name) 628 / Developmental Test Technology & Sustainment	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
replacement and upgrade of range control instrumentation, radar, optics and telemetry equipment used in missile testing; acquires data recorders, signal conditioning equipment, data processing equipment and other instrumentation for various aircraft tests; upgrades natural environments test instrumentation used for testing weapon systems, vehicles, munitions and support equipment in extreme hot desert environments as well as extreme cold conditions; continues upgrade of survivability/vulnerability test capabilities in support of live fire testing; upgrades and replaces mobile range communications equipment and digital end devices; and improves test efficiency through the use of smart devices as data collectors. FY 2018 Plans: Test centers will continue to provide, acquire and upgrade instrumentation for C4, RAM, ballistics, missile, aviation and environmental testing across all test commodity areas and enhance/expand the use of common data collectors, smart devices, and enterprise data management tools. The RTC will continue the procurement of critical hardware in support of their ongoing aviation and missile flight test telemetry enhancements. This project will greatly support the testing of the UH-60V, AH-64E, CH-47F, and Joint Air-to-Ground missile programs. The ATC will continue procuring body armor test instrumentation and crew survivability instrumentation. The EPG will initiate the development of a system that will enable test engineers to collect data from C4 systems with high fidelity and allow evaluators to correlate information for complete network analysis. The WSTC will continue updating, replacing, and modifying the obsolete ground stations and control infrastructure in support of the surrogate threat target capabilities (QF-4, QF-16, and subscale drones) at the test range. The YTC will continue to procure essential test support equipment to maintain machine shop capabilities that support test program utilizing ballistic pressure transducers and adapters. This program will continue to support ballistics testing at Aberdeen Proving Ground, Dugway Proving Ground, and Picatinny Arsenal. FY 2019 Plans: Test centers will continue to provide, acquire and upgrade instrumentation for C4, RAM, ballistics, missile, aviation and environmental testing across all test commodity areas and enhance/expand the use of common data collectors, smart devices, and enterprise data management tools. This includes the continuation and completion of previous fiscal year initiatives in addition to the execution of new initiatives to modernize test infrastructure. The RTC will complete a critical storage backup system modernization program that will permit them to store the significant data that the developmental systems are producing. The ATC will continue its body armor test instrumentation and crew survivability instrumentation developments. The EPG will continue the development of their data collection system to store, analyze, and fully characterize the increased volume of data from high throughput network systems. The WSTC will continue with flight termination systems modernization to improve the reliability of timing distribution in a GPS denied environment. The YTC will upgrade their Kineto Tracking Mount (KTM) instrumentation, providing upgraded computer systems, video recording, and transmissions systems that meet required standards. FY 2018 to FY 2019 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605602A / Army Technical Test Instrumentation and Targets	Project (Number/Name) 628 / Developmental Test Technology & Sustainment	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Project funding restores planned funding profile.			
Accomplishments/Planned Programs Subtotals		41.011	33.948
		FY 2017	FY 2018
Congressional Add: Program Increase (ATEC) / Cybersecurity of Space and Missile Defense Assets (SMDC)		20.000	-
FY 2017 Accomplishments: N/A			
Congressional Adds Subtotals		20.000	-
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605602A / Army Technical Test Instrumentation and Targets				Project (Number/Name) 62C / Modeling and Simulation Instrumentation			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
62C: Modeling and Simulation Instrumentation	-	9.512	15.294	16.754	-	16.754	16.759	17.238	17.708	18.077	0.000	111.342
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The United States (U.S.) Army Test and Evaluation Command (ATEC) plans, conducts and reports on operational tests, assessments and experiments in order to provide essential information for the acquisition and fielding of War Fighting Systems. Operational Test (OT) Modeling Simulation and Instrumentation (MS&I) collects required data from systems under test and the systems which they integrate with to support effectiveness, survivability, and suitability analysis; these systems also provide real-time position location and status tracking to support test control. The Army's Operations Tempo (OPTEMPO) has reduced the number of tactical units and vehicles available to support OT, making enhancement of live forces through simulation essential for testing in a realistic, operational environment by simulating tactical engagements, additional units, message traffic, effects, and terrain. ATEC OT MS&I 62C funding is used to adapt capabilities from other organizations (including within ATEC), purchase off-the-shelf systems, and develop and sustain OT-unique simulation and instrumentation systems. As required, the Program Executive Office for Simulation, Training, and Instrumentation (PEO STRI) Project Manager for Instrumentation, Targets and Threat Simulators (PM ITTS) provides development and integration of major simulation and instrumentation systems such as Integrated Live, Virtual, and Constructive (LVC) Test Environment (ILTE). The MS&I (Sustainment and Minor Development) program funds the expertise and the adaptation, purchases, minor development and sustainment requirements that support systems undergoing OT. Costs unique to specific systems under test may require Program Manager (PM) funding.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Modeling, Simulation and Instrumentation	9.512	15.294	16.754
Description: Develops and enhances ATEC's simulation/stimulation of Mission Command, Fire Support, Air Defense, Command, Control, Communication Computer Intelligence, Surveillance and Reconnaissance (C4ISR), and Network systems. Improves and sustains Real-Time Casualty Assessment (RTCA) (including ILTE capabilities). Also develops, enhances, and sustains Performance Instrumentation Systems, Time Space Positioning Information (TSPI), Telemetry Systems, and Imaging Systems together with their associated data management.			
FY 2018 Plans: Will continue to sustain ATEC's Fire Support, Air Defense, C4ISR, and Network OT tools. Will improve our RTCA secure network and tactical engagement capabilities to support JLTV, Apache Block III, M109 Family of Vehicles, Gray Eagle, Spider, and Stryker PIP OTs. Will prepare for the Abrams and the Bradley PIP, AN/TPQ-53 Radar, Distributed Common Ground System - Army (DCGS-A), and Joint Warning and Reporting Network (JWARN) OTs. Will sustain Performance Instrumentation Systems, TSPI, and Telemetry and Imaging Systems and associated data management capabilities. Will transition to Windows 10, replace IT			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605602A / Army Technical Test Instrumentation and Targets	Project (Number/Name) 62C / Modeling and Simulation Instrumentation	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
systems not compliant with new and emerging cyber security requirements, and acquire additional Airborne Position Location System (APLS) to sustain Airborne and Special Operation OTs. FY 2019 Plans: Will continue to sustain ATEC's Fire Support, Air Defense, C4ISR, and Network OT tools. Will improve our RTCA secure network and tactical engagement capabilities to support future Army Integrated and Missile Defense (AIAMD), Joint Tactical Radio System (JTRS), Leaders Radio, Mid-Tier Networking Vehicular Radio (MNVR), Joint Enterprise Network Manager (JENM), and Shadow (RQ-7BVN) TUAS OTs. Will support the Abrams and Bradley PIP, AN/TPQ-53, DCGS-A, and JWARN OTs. Will sustain Performance Instrumentation Systems, TSPI, and Telemetry and Imaging Systems and associated data management capabilities. Will execute life cycle replacement of MS&I systems which have reached their end of life. Will sustain and upgrade MS&I systems used for operational tests. FY 2018 to FY 2019 Increase/Decrease Statement: Funding represents planned progression of Modeling, Simulation, and Instrumentation efforts.			
Accomplishments/Planned Programs Subtotals		9.512	15.294
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605604A I Survivability/Lethality Analysis							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	38.245	41.843	40.496	-	40.496	41.075	41.881	42.872	42.037	0.000	288.449
675: Army Survivability Analysis & Evaluation Supp	-	38.245	41.843	40.496	-	40.496	41.075	41.881	42.872	42.037	0.000	288.449

A. Mission Description and Budget Item Justification

This Program Element (PE) funds analytical products necessary for the inherently-governmental Army Test & Evaluation Command/Army Evaluation Center (ATEC/AEC) mission. Products result from investigating, analyzing, assessing, and reporting on the survivability of Soldiers, and on the survivability, lethality and vulnerability (SLV) of the highest-priority Army systems, whether those systems are employed during stability, support, defensive, or offensive missions. While the Army is at war, analytical results funded by this PE are also directly leveraged for survivability support to current operations.

Developed through measurement, experiment, test support, and modeling and simulation (M&S), ATEC uses the products funded by this PE in many ways to make the Army force more survivable. This PE provides quantitative lethality and survivability analyses and data for fielded and developmental systems as the Army makes the required choices to transform into a modular Brigade Combat Team (BCT) based organization. Products concern: Army fire support systems, direct fire munitions; Army air defense and missile defense systems; Army aviation systems including Unmanned Aerial Vehicles; network communications and other network enabled battle command and communication systems; and selected joint services systems particularly relevant to the Army's joint and expeditionary role. Products also include analysis and data concerning individual Soldier items, including protective equipment such as helmets and vests. These survivability products are leveraged into rapid-equipping initiatives and other technical support for operational forces involved in the current fight. Continued development of these products also guarantees preservation of the Army's vitally-needed technical corporate memory for expert survivability advice.

Survivability analyses funded by this PE are conducted across the spectrum of battlefield threats to include: guns, missiles, mines and other methods of inflicting physical damage; jammers, countermeasures, and other electronic warfare techniques; Cybersecurity and computer network operations; and directed energy weapons. This survivability information enables developers, users, and decision makers to perform credible survivability tradeoffs for both Soldiers and materiel. These technical survivability details enable properly informed decisions concerning systems and tactics that maximize both the combat power and survivability of Army forces. Survivability data and analysis results funded by this PE are efficiently leveraged for many different Army uses, reducing total cost to the Army by eliminating the need for duplicative capabilities funded by individual system developers. Central funding of this mission assures the Army accurate and consistent treatment of survivability across all classes of systems, across all formal system Evaluations, and across the Army's Army Regulation (AR) 5-5 studies process. Work program is prioritized principally by the ATEC/AEC and is used by them in the Army's formal Evaluation process in such a way that ATEC can comply with its legally-mandated responsibility to assess system survivability along with effectiveness and suitability. Program Managers (PM) and the Program Executive Officers (PEO) use the survivability analyses and data funded by this PE to make design decisions that are optimized for survivability, to direct specific weapon system development efforts that are needed for survivability enhancement, and to structure product improvement programs. Soldier survivability data and analysis is leveraged to support the survivability portion of the Headquarters' Department of the Army (HQDA) Deputy Chief of Staff, Personnel (G1) Human Systems Integration (HSI) program. United States (U.S.) Army Training and Doctrine Command (TRADOC) combat developers exploit the survivability products funded by this PE to initiate and improve survivability/lethality requirements, and to develop and refine doctrine and tactics. Also, the quantitative analytical results funded by the PE are leveraged as core inputs to formal AR 5-5 studies and other

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605604A / <i>Survivability/Lethality Analysis</i>

studies as directed by Army leaders. Finally, for particularly urgent or controversial survivability issues, data and analysis funded by this PE are used directly by senior Army decision makers to assure technically sound program/production decisions.

This PE also supports Cybersecurity survivability analysis of Army battle command/networked systems as well as Army network architectures and technology. Supports ATEC and other electronic warfare vulnerability testers and evaluators by developing and providing highly technical specialized field countermeasure environments that threat forces may employ against Army communications networks, air defense and other systems. In conjunction with PMs and Army intelligence agencies, this PE also analyzes technical vulnerabilities of foreign weapons, network related systems, and intelligence Electronic Warfare (EW) systems to U.S. Army EW systems.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	38.571	41.843	33.341	-	33.341
Current President's Budget	38.245	41.843	40.496	-	40.496
Total Adjustments	-0.326	0.000	7.155	-	7.155
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.322	-			
• Adjustments to Budget Years	-	-	7.155	-	7.155
• FFRDC Transfer	-0.004	-	-	-	-

Change Summary Explanation

Fiscal Year (FY) 2019 increase of \$7.155M is the result of a technical requirement update for modernization investments in combination with revised civilian pay and inflation rate assumptions.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605604A / Survivability/Lethality Analysis				Project (Number/Name) 675 / Army Survivability Analysis & Evaluation Supp			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
675: Army Survivability Analysis & Evaluation Supp	-	38.245	41.843	40.496	-	40.496	41.075	41.881	42.872	42.037	0.000	288.449
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds analytical products necessary for inherently-governmental Army Test & Evaluation Command/Army Evaluation Center's (ATEC/AEC) mission. Products result from investigating, analyzing, assessing, and reporting on the survivability of Soldiers, and on the survivability, lethality and vulnerability (SLV) of the highest priority Army systems whether those systems are employed during stability, support, defensive, or offensive missions. Developed through measurement, experiment, test support, and modeling and simulation (M&S), the products funded by this Project are used in many ways to make the Army force more survivable. The Project provides quantitative lethality and survivability analyses and data for fielded and developmental systems. Products concern: Army fire support systems, direct fire munitions; Army air defense and missile defense systems; Army aviation systems including Unmanned Aerial Vehicles; network communications and other network enabled battle command and communication systems; and selected joint services systems particularly relevant to the Army's joint and expeditionary role. Products also include analysis and data concerning individual Soldier items including protective equipment such as helmets and vests. These survivability products are leveraged where possible into rapid-equipping initiatives and other technical support for operational forces involved in the current fight. Continued development of these products also guarantees preservation of the Army's vitally needed technical corporate memory for expert survivability advice.

Survivability analyses funded by this Project are conducted across the spectrum of battlefield threats to include guns, missiles, mines and other methods of inflicting physical damage; jammers, countermeasures, and other electronic warfare techniques; cybersecurity and computer network operations; and directed energy weapons. This survivability information enables developers, users, and decision makers to perform credible survivability tradeoffs for both Soldiers and materiel. These technical survivability details enable properly informed decisions concerning systems and tactics that maximize both the combat power and survivability of Army forces. Survivability data and analysis results funded by this Project are efficiently leveraged for many different Army uses, reducing total cost to the Army by eliminating the need for duplicative capabilities funded by individual system developers. Central funding of this mission assures the Army accurate and consistent treatment of survivability across all classes of systems, across all formal system Evaluations, and across the Army regulation (AR) 5-5 studies process. Work program is prioritized principally by the ATEC/AEC and is used by them in the Army's formal Evaluation process in such a way that ATEC can comply with its legally mandated responsibility to assess system survivability along with effectiveness and suitability. Program Managers (PM) and the Program Executive Officers (PEO) use the survivability analyses and data funded by this Project to make design decisions that are optimized for survivability, to direct specific weapon system development efforts that are needed for survivability enhancement, and to structure product improvement programs. Soldier survivability data and analysis is leveraged to support the survivability portion of the HQDA G1 Human Systems Integration (HIS) program. United States (U.S.) Army Training and Doctrine Command (TRADOC) combat developers exploit the survivability products funded by this Project to initiate and improve survivability/lethality requirements, and to develop and refine doctrine and tactics. Also, the quantitative analytical results funded by the Project are leveraged as core inputs to formal AR 5-5 studies and other studies as directed by Army leaders. When the Army is at war, analytical results funded by this Project are also directly leveraged for survivability support to current operations. Finally, for particularly urgent or controversial survivability issues, data and analysis funded by this Project are used directly by senior Army decision makers to assure technically sound program/production decisions.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605604A / Survivability/Lethality Analysis	Project (Number/Name) 675 / Army Survivability Analysis & Evaluation Supp		
This Project also supports highly technical cyber survivability analysis of Army battle command/networked systems as well as Army network architectures and technology. Supports ATEC and other electronic warfare vulnerability testers and evaluators by developing and providing highly technical specialized field countermeasure environments that threat forces may employ against Army communications networks, air defense and other systems. In conjunction with PMs and Army intelligence agencies, analyzes technical vulnerabilities of foreign weapons, network related systems, and intelligence Electronic Warfare (EW) systems to U.S. Army EW systems. Provides survivability analysis to System of Systems Network Vulnerability Assessments, to Chief Information Office (CIO) G6, Network Integration Evaluation (NIE), to triad (the Brigade Modernization Command (BMC), ATEC, and the System of Systems Integration (SoSI) Directorate.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Title: Survivability, Lethality, Vulnerability Analyses (SLVA) for Ground, Aviation, Munitions, and Soldier Systems Description: This activity provides integrated survivability, lethality, vulnerability analyses for developmental aviation, ground, soldier and munition systems including Stryker, Ground Soldier System, Excalibur, and Intelligent Mine System (IMS). Activity also provides ballistic survivability/vulnerability analysis for systems such as Mine Resistant Ambush Protected (MRAP) vehicle, Guided Multiple Launch Rocket system (GMLRS) Alternative Warhead, Excalibur Live Fire Test and Evaluation (LFT&E) System Engineering Test-P1 test events, the Joint Light Tactical Vehicle (JLTV), the Amphibious Assault Vehicle Survivability Upgrade (AAV-SU), and the BRADLEY M2A4. FY 2018 Plans: Conduct ballistic, cyber and EW SLVA on AEC's highest priority platform and weapon systems, supporting LFT&E pre-shot predictions, damage assessments, post-shot analysis, and crew survivability analysis and provide technical data for system evaluation reports. Provide vulnerability reduction recommendations to PMs for those systems supported. For systems analyzed, provide data to the Army Material Systems Analysis Agency (AMSAA) for support of Army Analyses of Alternatives. Make the necessary preparations for the start of full-up system-level LFT&E in FY18-20. Perform damage and crew casualty assessments as well as post-shot analyses during scheduled LFT&E programs. Collect data incorporated into the Director, Operational Test & Evaluation (DOT&E) live-fire report to Congress as well as the System Evaluation Reports prepared by ATEC. FY 2019 Plans: Will conduct ballistic and other needed SLVA on AEC's highest priority platform and weapon systems, supporting LFT&E pre-shot predictions, damage assessments, post-shot analysis, and crew survivability analysis and provided technical data for system evaluation reports. Will provide vulnerability reduction recommendations to PMs for those systems supported. For systems analyzed, will provide data to AMSAA for support of Army Analyses of Alternatives and other Army studies; will incorporate collected data into the DOT&E live-fire report to Congress as well as the System Evaluation Reports prepared by ATEC. FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 adjustment reflects technical requirement update.			14.654	19.468	18.621
Title: Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) System Survivability Assessments			22.037	20.761	20.274

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605604A / Survivability/Lethality Analysis	Project (Number/Name) 675 / Army Survivability Analysis & Evaluation Supp		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Description: This effort produces assessments of the survivability of C4ISR systems in EW and cyber threat environments and conducts Electronic Attack (EA) and cyber analyses that reveal critical vulnerabilities in C4ISR systems. It also defines, demonstrates, and recommends mitigation options to proponents and evaluators of C4ISR. A cyber vulnerability database is maintained for the benefit of the community. FY 2018 Plans: Analyze Electronic Protection (EP) and cybersecurity for systems under test and systems under investigation for FY17 NIEs and for additional highest priority technologies and developmental systems as specified by ATEC so as to reduce costs of downstream development by identifying and fixing vulnerabilities earlier and to assure that formal Army evaluations at Milestone decision points are fully informed on EP and cyber issues. Apply cyber-attack M&S tools so as to more accurately assess the operational impact of such attacks on small unit mission accomplishment. FY 2019 Plans: Will analyze EP and cybersecurity for systems under test and systems under investigation in future NIEs and other high priority tests and for additional highest priority technologies and developmental systems as specified by ATEC so as to reduce costs of downstream development by identifying and fixing vulnerabilities earlier and to assure that formal Army evaluations at Milestone decision points are fully informed on EP and cyber issues. Will mature and update cyber-attack M&S tools so as to more accurately assess the operational impact of such attacks on small unit mission accomplishment. FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 adjustment reflects revised economic assumptions.				
Title: Survivability, Lethality, Vulnerability (SLV) Analyses for Developmental Air and Missile Defense Systems Description: Conduct integrated SLV analyses for developmental air and missile defense systems, pre-planned product improvements of current systems, and recently fielded systems. These systems include the Ballistic Missile Defense System (BMDS), Terminal High Altitude Air Defense (THAAD), PATRIOT, Surface-Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM), Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS), and Sentinel. FY 2018 Plans: Design, develop, and employ advanced electronic attack countermeasures to assess Air and Missile Defense (AMD) system of systems. Provide advanced EA and cybersecurity testing for AMD user operational test events. Provide additional EA and cybersecurity analysis and experimentation on other AMD systems as needed by ATEC. FY 2019 Plans:		1.554	1.614	1.601

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605604A / <i>Survivability/Lethality Analysis</i>	Project (Number/Name) 675 / <i>Army Survivability Analysis & Evaluation Supp</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Will design, develop, and employ advanced electronic attack countermeasures to assess priority AMD systems and system of systems. Will develop and provide advanced EA and cybersecurity test support for highest priority operational and developmental test events. Will provide additional EA/EP and cyber analysis for other AMD systems as prioritized by ATEC.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 adjustment reflects revised economic assumptions.			
Accomplishments/Planned Programs Subtotals		38.245	41.843
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605606A / <i>Aircraft Certification</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	4.486	4.804	3.941	-	3.941	3.461	2.738	2.677	7.033	Continuing	Continuing
092: <i>Aircraft Certification</i>	-	4.486	4.804	3.941	-	3.941	3.461	2.738	2.677	7.033	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Airworthiness Certification Program Element (PE) ensures safe flight operation of Army aircraft and aviation systems by means of technical design approval and qualification of systems to appropriate airworthiness standards. This PE provides independent airworthiness qualification for all assigned developmental and in-production Army aircraft, both manned and unmanned, as required by Army Regulation (AR) 70-62, and is essential for ensuring the safe operation of Army aircraft. This PE performs engineering functions (design, analysis, testing, demonstrations, and system specification compliance) essential for certifying the airworthiness of assigned Army aircraft, to include performing safety-of-flight investigations/assessments, evaluating system risks, developing Airworthiness Impact Statements, developing Airworthiness Releases, and evaluating Safety of Flight Messages and Aviation Safety Action Messages for new and upgraded aircraft systems. This PE also provides management/execution of the Army's Aeronautical Design Standards (ADS) program; management/execution of airworthiness approval for new systems and materiel changes for all assigned Army aircraft systems; airworthiness engineering support to the Program Executive Office for Aviation (PEO AVN) and the Technology Applications Program Office (TAPO), the Army's Special Operations Aircraft program office, in developing requirements for major development/modification and for any future systems/subsystems; and management of the test and evaluation process in support of the airworthiness qualification process. The Airworthiness Certification PE also performs general research and development in support of aircraft qualification and overarching airworthiness projects that involve multiple aircraft models. Current ongoing programs requiring airworthiness qualification include: PEO Aviation and TAPO Future Force systems including Longbow Apache E-model; Chinook F-model; Blackhawk M-model; Special Operations MH-47G and MH-60M; Light Utility Helicopter; Gray Eagle unmanned aircraft system (UAS); Enhanced Multi-sensor Airborne Reconnaissance and Sensor System (EMARSS); and modified Shadow UAS. Additionally, the Airworthiness Certification PE supports application of other critical aviation subsystems onto Army aircraft, including Aircraft Survivability Equipment (e.g. Advanced Threat Infrared Countermeasures (ATIRCM), Common Missile Warning System (CMWS), Aviation Mission Equipment (e.g. advanced multiband avionics and Tactical Radio Systems and digital data links), Common Sensor (electro-optical multi-spectrum visual sensor), and Blue Force Tracker). Project 092 also provides: airworthiness certification for military-use civil derivative aircraft technical qualification through the Federal Aviation Administration's Military Certification Office; development of airworthiness procedures, specifications, critical standards, and other design and qualification documents; participation in senior leadership mandated airworthiness tri-service activities (e.g. National Airworthiness Council, Joint Aeronautical Commanders Group) and international airworthiness related activities mandated by treaty (e.g. Flight Into Non-segregated Airspace (FINAS)); and limited early airworthiness involvement in Technology Transition projects (e.g. Joint Multi Role (JMR) Technology Demonstrator and Future Vertical Lift aircraft) and other Office of the Secretary of Defense (OSD) initiatives.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		PE 0605606A / Aircraft Certification			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	4.665	4.804	3.983	-	3.983
Current President's Budget	4.486	4.804	3.941	-	3.941
Total Adjustments	-0.179	0.000	-0.042	-	-0.042
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.177	-			
• Adjustments to Budget Years	-	-	-0.042	-	-0.042
• FFRDC Transfer	-0.002	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605606A / Aircraft Certification				Project (Number/Name) 092 / Aircraft Certification			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
092: Aircraft Certification	-	4.486	4.804	3.941	-	3.941	3.461	2.738	2.677	7.033	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Airworthiness Certification Project ensures safe flight operation of Army aircraft and aviation systems by means of technical design approval and qualification of systems to appropriate airworthiness standards. It provides independent airworthiness qualification for all assigned developmental and in-production Army aircraft, both manned and unmanned, as required by Army Regulation (AR) 70-62, and is essential for ensuring the safe operation of Army aircraft. This Project performs engineering functions (design, analysis, testing, demonstrations, and system specification compliance) essential for certifying the airworthiness of assigned Army aircraft, to include performing safety-of-flight investigations/assessments, evaluating system risks, developing Airworthiness Impact Statements, developing Airworthiness Releases, and evaluating Safety of Flight Messages and Aviation Safety Action Messages for new and upgraded aircraft systems. This Project also provides management/execution of the Army's Aeronautical Design Standards (ADS) program; management/execution of airworthiness approval for new systems and materiel changes for all assigned Army aircraft systems; airworthiness engineering support to the Program Executive Office for Aviation (PEO AVN) and the Technology Applications Program Office (TAPO), the Army's Special Operations Aircraft program office, in developing requirements for major development/modification and for any future systems/subsystems; and management of the test and evaluation process in support of the airworthiness qualification process. This Project also performs general research and development in support of aircraft qualification and overarching airworthiness projects that involve multiple aircraft models. Current ongoing programs requiring airworthiness qualification include: PEO Aviation and TAPO Future Force systems including Longbow Apache E-model; Chinook F-model; Blackhawk M-model; Special Operations MH-47G and MH-60M; Light Utility Helicopter; Gray Eagle unmanned aircraft system (UAS); Enhanced Multi-sensor Airborne Reconnaissance and Sensor System (EMARSS); and modified Shadow UAS. Additionally, the Airworthiness Certification program supports application of other critical aviation subsystems onto Army aircraft, including Aircraft Survivability Equipment (e.g. Advanced Threat Infrared Countermeasures (ATIRCM), Common Missile Warning System (CMWS), Aviation Mission Equipment (e.g. advanced multiband avionics and Tactical Radio Systems and digital data links), Common Sensor (electro-optical multi-spectrum visual sensor), and Blue Force Tracker). This Project also provides: airworthiness certification for military-use civil derivative aircraft technical qualification through the Federal Aviation Administration's Military Certification Office; development of airworthiness procedures, specifications, critical standards, and other design and qualification documents; participation in senior leadership mandated airworthiness tri-service activities (e.g. National Airworthiness Council) and international airworthiness related activities mandated by treaty (e.g. Flight Into Non-segregated Airspace (FINAS)); and limited early airworthiness involvement in Technology Transition projects (e.g. Joint Multi Role (JMR) Technology Demonstrator and Future Vertical Lift aircraft) and other Office of the Secretary of Defense (OSD) initiatives.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Certification Assessments and Studies Force Modernization Aircraft	0.051	0.051	0.042
Description: Perform assessments and studies in support of Force Modernization Aircraft Systems			
FY 2018 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605606A / Aircraft Certification	Project (Number/Name) 092 / Aircraft Certification	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Conduct technical and airworthiness qualification assessments and studies to demonstrate airworthiness and system performance for Army force modernization aircraft systems or multi-system programs (e.g. AH-64E, UH-60M, MH-47G, MH-60M, etc). FY 2019 Plans: Will conduct technical and airworthiness qualification assessments and studies to demonstrate airworthiness and system performance for Army force modernization aircraft systems or multi-system programs (e.g. AH-64E, UH-60M, MH-47G, MH-60M, etc). FY 2018 to FY 2019 Increase/Decrease Statement: FY19 adjustment based on DA/Senior leader priorities.			
Title: Certification Requirements and Studies for Future Aircraft Description: Perform studies to support airworthiness certification requirements for Future Aircraft Systems FY 2018 Plans: Conduct studies of Airworthiness Certification requirements for future aircraft systems and other technology transition programs (e.g. Joint Multi-Role Technology Demonstrator Aircraft, Future Vertical Lift Aircraft, Improved Turbine Engine Program). FY 2019 Plans: Will conduct studies of Airworthiness Certification requirements for future aircraft systems and other technology transition programs (e.g. Joint Multi-Role Technology Demonstrator Aircraft, Future Vertical Lift Aircraft, Improved Turbine Engine Program) FY 2018 to FY 2019 Increase/Decrease Statement: FY19 adjustment based on DA/Senior leader priorities.		0.617	0.617
Title: Design Standards Description: Support the development, implementation and maintenance to support Army Aeronautical Design Standards, airworthiness procedures and tools, and overarching Airworthiness qualification documentation. FY 2018 Plans: Develop, implement, and maintain Army Aeronautical Design Standards, airworthiness procedures and tools, and overarching airworthiness qualification documentation. FY 2019 Plans: Will develop, implement, and maintain Army Aeronautical Design Standards, airworthiness procedures and tools, and overarching airworthiness qualification documentation. FY 2018 to FY 2019 Increase/Decrease Statement:		2.351	2.667

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605606A / Aircraft Certification	Project (Number/Name) 092 / Aircraft Certification		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
FY19 adjustment based on DA/Senior leader priorities.				
Title: Certification Assessments of Technology Upgrades Description: Perform certification assessments of technology upgrades. FY 2018 Plans: Conduct technical and airworthiness certification assessments of technology upgrades to Army force modernization aircraft systems or programs (e.g. Advanced Threat Infrared Countermeasures integration, Common Missile Warning System integration, Common Sensor integration). FY 2019 Plans: Will conduct technical and airworthiness certification assessments of technology upgrades to Army force modernization aircraft systems or programs (e.g. Advanced Threat Infrared Countermeasures integration, Common Missile Warning System integration, Common Sensor integration). FY 2018 to FY 2019 Increase/Decrease Statement: FY19 adjustment based on DA/Senior leader priorities.		0.051	0.051	0.042
Title: Commercial Derivative Aircraft Description: Technical and airworthiness qualification for Commercial Derivative Aircraft. FY 2018 Plans: Provide technical and airworthiness qualification for Commercial Derivative Aircraft through the Federal Aviation Administration. FY 2019 Plans: Will provide technical and airworthiness qualification for Commercial Derivative Aircraft through the Federal Aviation Administration. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 adjustment based on DA/Senior leader priorities.		0.446	0.446	0.370
Title: Technology Advancement Description: Support efforts to establish and maintain aircraft safety for a fleet of aircraft. FY 2018 Plans: Lead and participate in national and international airworthiness certification committees, conferences and working groups responsible for establishing and maintaining aircraft safety for a fleet of aircraft (e.g. National Airworthiness Council, Joint Aeronautical Commanders Group, Joint Propulsion Coordinating Committee, North Atlantic Treaty Organization (NATO))		0.970	0.972	0.807

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605606A / <i>Aircraft Certification</i>	Project (Number/Name) 092 / <i>Aircraft Certification</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Airworthiness working groups, Air and Space Interoperability Council (ASIC) Airworthiness Working Groups, and Global Air Traffic Management working groups.)			
FY 2019 Plans: Will lead and participate in national and international airworthiness certification committees, conferences and working groups responsible for establishing and maintaining aircraft safety for a fleet of aircraft (e.g. National Airworthiness Council, Joint Aeronautical Commanders Group, Joint Propulsion Coordinating Committee, NATO Airworthiness working groups, ASIC Airworthiness Working Groups, and Global Air Traffic Management working groups.)			
FY 2018 to FY 2019 Increase/Decrease Statement: FY19 adjustment based on DA/Senior leader priorities.			
Accomplishments/Planned Programs Subtotals		4.486	4.804
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605702A / Meteorological Support to RDT&E Activities							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	6.793	7.238	9.767	-	9.767	8.286	8.508	8.729	8.865	0.000	58.186
128: Meteorological Support To RDT&E Activities	-	6.793	7.238	9.767	-	9.767	8.286	8.508	8.729	8.865	0.000	58.186

A. Mission Description and Budget Item Justification

This Program Element (PE) provides meteorological support to research, development, test, and evaluation (RDTE) activities and provides standard and specialized weather forecasts and data to satisfy Army/Department of Defense (DoD) RDTE test requirements for modern weaponry, such as: (1) unique atmospheric analysis and sampling to include atmospheric transmittance, extinction, optical scintillation, infrared temperature, aerosol/smoke cloud dispersion characteristics, and ballistic meteorological measurements; (2) test event forecasting to include prediction of sound propagation for ballistic firing tests, specialized prediction of light levels and target to background measurements, and predictions for electro-optical testing and ballistic artillery/mortar firing; and (3) advisory and warning products such as go/no-go test recommendations for ballistic and atmospheric probe missiles, smoke/obscurant tests, hazard predictions for chemical agent munitions disposal, monitoring dispersion of simulant clouds for chemical/biological detector tests, simulated nuclear blasts, and weather warnings for test range safety. The PE provides technical weather support to Army and Joint Program Executive Officers (PEOs), Project Managers (PMs), and the Army test ranges and sites at: White Sands Test Center (WSTC), White Sands Missile Range, New Mexico; Electronic Proving Ground (EPG), Fort Huachuca, Arizona; West Desert Test Center (WDTC), Dugway Proving Ground, Utah; Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; Redstone Test Center (RTC), Redstone Arsenal, Alabama; Yuma Test Center (YTC), Yuma Proving Ground, Arizona (including the Cold Regions Test Center (CRTC), Fort Greely, Alaska); Operational Test Command (OTC), Fort Hood, Texas and Fort Bragg, North Carolina. This PE develops methodologies and acquires instrumentation and systems that allow meteorological teams to support current and future Army/DoD RDTE requirements. It finances indirect meteorological support operating costs not billable to customers and replacement/upgrade of meteorological instrumentation and support systems. Direct costs for meteorological support services are not funded by this PE, but are borne by the customer (i.e., materiel/weapons developers and project/product managers) in accordance with DoD Directive 7000.14R, October 1999. This PE enables more effective test scheduling and execution, and is essential to the accomplishment of the Army's developmental and operational test mission in that precise weather modeling and measurements directly influence test item performance and quantify test item weather dependencies and vulnerabilities.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0605702A / Meteorological Support to RDT&E Activities			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	6.925	7.238	10.011	-	10.011
Current President's Budget	6.793	7.238	9.767	-	9.767
Total Adjustments	-0.132	0.000	-0.244	-	-0.244
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.130	-			
• Adjustments to Budget Years	-	-	-0.244	-	-0.244
• FFRDC Transfer	-0.002	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605702A / Meteorological Support to RDT&E Activities				Project (Number/Name) 128 / Meteorological Support To RDT&E Activities			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
128: Meteorological Support To RDT&E Activities	-	6.793	7.238	9.767	-	9.767	8.286	8.508	8.729	8.865	0.000	58.186
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides meteorological support to research, development, test, and evaluation (RDTE) activities and provides standard and specialized weather forecasts and data for test reports to satisfy Army/Department of Defense (DoD) RDTE test requirements for modern weaponry, such as: (1) unique atmospheric analysis and sampling to include atmospheric transmittance, extinction, optical scintillation, infrared temperature, aerosol/smoke cloud dispersion characteristics, and ballistic meteorological measurements; (2) test event forecasting to include prediction of sound propagation for ballistic firing tests, specialized prediction of light levels and target to background measurements, and predictions for electro-optical testing and ballistic artillery/mortar firing; and (3) advisory and warning products such as go / no-go test recommendations for ballistic and atmospheric probe missiles, smoke/obscurant tests, hazard predictions for chemical agent munitions disposal, monitoring dispersion of simulant clouds for chemical/biological detector tests, simulated nuclear blasts, and weather warnings for test range safety. Provides technical support to Army and Joint Program Executive Officers (PEOs), Project Managers (PMs), and the Army test ranges and sites at: White Sands Test Center (WSTC), White Sands Missile Range, New Mexico; Electronic Proving Ground (EPG), Fort Huachuca, Arizona; West Desert Test Center (WDTC), Dugway Proving Ground, Utah; Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; Redstone Test Center (RTC), Redstone Arsenal, Alabama; Yuma Test Center (YTC), Yuma Proving Ground, Arizona (including the Cold Regions Test Center (CRTC), Fort Greely, Alaska); Operational Test Command (OTC), Fort Hood, Texas and Fort Bragg, North Carolina. This Project develops methodologies and acquires instrumentation and systems that allow meteorological teams to support current and future Army/DoD RDTE requirements. It finances indirect meteorological support operating costs not billable to customers and replacement/upgrade of meteorological instrumentation and support systems. Direct costs for meteorological support services are not funded by this Project, but are borne by the customer (i.e., materiel/weapons developers and project/product managers) in accordance with DoD Directive 7000.14R, October 1999. This Project enables more effective test scheduling and execution, and is essential to the accomplishment of the Army's developmental and operational test mission in that precise weather modeling and measurements directly influence test item performance and quantify test item weather dependencies and vulnerabilities.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Civilian Pay and Support Costs	2.015	2.391	2.191
Description: Funding related to Civilian Pay and associated indirect costs for meteorological support.			
FY 2018 Plans: Provide indirect costs (personnel salaries) for generating weather forecasts, severe weather warnings and advisories; staff meteorological services; and atmospheric measurements in support of Army/DoD tests and projects at eight Army test sites and alternate test sites as required. Will provide program management for meteorological support to the Army research, development, test and evaluation community and technical review/assistance to ranges and meteorological support teams. Will provide			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605702A / <i>Meteorological Support to RDT&E Activities</i>		Project (Number/Name) 128 / <i>Meteorological Support To RDT&E Activities</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
technical meteorological support to the Army RDTE community including collaboration between Army meteorologists and the National Center for Atmospheric Research (NCAR) toward improvements to the Four Dimensional Weather (4DWX) System and associated system administration. FY 2019 Plans: Will provide indirect costs (personnel salaries) for generating weather forecasts, severe weather warnings and advisories; staff meteorological services; and atmospheric measurements in support of Army/DoD tests and projects at eight Army test sites and alternate test sites as required. Will provide program management for meteorological support to the Army research, development, test and evaluation community and technical review/assistance to ranges and meteorological support teams. Will provide technical meteorological support to the Army RDTE community including collaboration between Army meteorologists and the NCAR toward improvements to the 4DWX System and associated system administration. FY 2018 to FY 2019 Increase/Decrease Statement: Continuity of effort.					
Title: Four Dimensional Weather System (4DWX) and Instrumentation Description: Provides funding for meteorological instrumentation and technology to support RDTE activities at Army test sites. Includes funding for sustainment and enhancement of the 4DWX system, an advanced meteorological support system that provides high-resolution weather forecasts and analyses. The 4DWX analyses and forecasts the 3-dimensional structure of the atmosphere over time (4th dimension) and is used in test planning, conduct, and forensic analyses. FY 2018 Plans: Continue 4DWX system sustainment and modernization to improve forecast accuracy in support of Army RDTE mission requirements, including development of a full-grid climatology using 4DWX final-analysis data, and further development of probabilistic modeling; improved data assimilation procedures, and configuration of 4DWX to optimize test range-specific accuracy. Instrumentation funding will be used to continue a multi-year effort to replace/upgrade obsolete instrumentation, including upper-air sounding systems, surface atmospheric meteorological system, and radar wind profilers at several test centers. FY 2019 Plans: Will continue 4DWX system sustainment and modernization to improve forecast accuracy in support of Army RDTE mission requirements, including development of a full-grid climatology using 4DWX final-analysis data, and further development of probabilistic modeling; improved data assimilation procedures, and configuration of 4DWX to optimize test range-specific accuracy. Instrumentation funding will be used to continue a multi-year effort to replace/upgrade obsolete instrumentation,			4.778	4.847	7.576

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605702A / <i>Meteorological Support to RDT&E Activities</i>	Project (Number/Name) 128 / <i>Meteorological Support To RDT&E Activities</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
including upper-air sounding systems, surface atmospheric meteorological system, and radar wind profilers at several test centers.				
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Increase due to 4DWX weather model development effort.				
Accomplishments/Planned Programs Subtotals		6.793	7.238	9.767
C. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
D. Acquisition Strategy N/A				
E. Performance Metrics N/A				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army **Date:** February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army</i> / BA 6: <i>RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605706A / <i>Materiel Systems Analysis</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	21.510	21.890	21.226	-	21.226	21.524	21.926	21.939	22.164	0.000	152.179
541: <i>Materiel Sys Analysis</i>	-	21.510	21.890	21.226	-	21.226	21.524	21.926	21.939	22.164	0.000	152.179

A. Mission Description and Budget Item Justification

This Program Element (PE) funds Department of the Army (DA) civilians at the United States (U.S.) Army Materiel Systems Analysis Activity (AMSAA) to conduct responsive and effective materiel systems analysis in support of senior Army decision making for equipping the U.S. Army. AMSAA conducts systems and engineering analyses to support Army decisions in technology; materiel acquisition; and the design, development, fielding, and sustainment of Army weapon/materiel systems. As part of this mission, AMSAA develops and certifies system level performance data used in Army studies, and develops item-level performance methodology and Models and Simulations (M&S).

AMSAA exercises Headquarters Department of the Army (HQDA) responsibility for developing, maintaining, improving, verifying, validating, and accrediting item-level performance data and M&S for combat effects and logistics. This includes the development and maintenance of common data formats. In support of its materiel systems analysis mission, AMSAA analyzes the performance and combat effectiveness of conceptual, developmental, and fielded systems. Unique models and methodologies have been developed to predict critical performance variables, such as weapon accuracy, target acquisition, rate of fire, probability of inflicting catastrophic damage, personnel and vehicle survivability, mobility, and system reliability. AMSAA generates performance and effectiveness measures and ensures their standard use across major Army and Joint studies. AMSAA conducts and supports various systems analysis efforts across the entire materiel system life cycle, such as: Analysis of Alternatives (AoAs); system cost/performance trade-offs and early technology trade-offs to inform system and acquisition program risk assessments; weapons/systems mix analyses; business case analyses; cost benefit analyses; requirements analyses; technology insertion studies; reliability growth studies; Physics of Failure (PoF) analyses; and analytical support for Test and Evaluation. These analyses are used by leadership within HQDA (both Army Staff and Assistant Secretaries in the HQDA Secretariat); Army Materiel Command; Army Research, Development and Engineering Command; Training and Doctrine Command; Army Test and Evaluation Command; Program Executive Officers/Project Managers; and the Office of Secretary of Defense (OSD)/Department of Defense (DoD). AMSAA analyses and data are used by these organizations in making acquisition, procurement, and logistics decisions in order to provide quality equipment and procedures to the Soldier, along with enhancing and sustaining readiness for the Current and Future Force.

AMSAA's M&S capabilities support the development, linkage, and accreditation of live, virtual, and constructive simulations, and provide unique tools that support systems analysis of individual systems and the combined-arms environment. AMSAA maintains a significant number of models and simulations, most of which were developed in-house to address specific analytical requirements. This M&S infrastructure provides a hierarchical modeling process that is unique to AMSAA and allows for a comprehensive performance and effectiveness prediction capability that can be utilized to make trade-off and investment decisions prior to extensive and expensive hardware testing of proposed systems/technologies for the readiness of the Current and Future Force.

AMSAA exercises HQDA responsibility for Army reliability methodology development. In this role, as the Army's Executive Agent for reliability and maintainability standardization improvement, AMSAA develops and implements reliability and maintainability reform initiatives that support acquisition decisions and life cycle management. AMSAA develops and applies engineering approaches that assess the reliability of Army materiel and also provides recommendations on ways to improve

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0605706A / Materiel Systems Analysis				
reliability, thereby reducing logistics footprints and life cycle costs, and extending failure-free periods for deployed equipment. AMSAA's electronic and mechanical PoF program pioneered the Army's involvement in utilizing computer-aided engineering tools in the analysis of root-cause failure mechanisms at the component level during the system design process. AMSAA's reliability engineering and PoF tools/analyses have been used extensively to support the design improvement of developmental and fielded systems used in Current Operations, resulting in improved reliability, reduced Operating and Support costs, and reduced logistics expenditures and footprints. AMSAA, in conjunction with the Army Evaluation Center (AEC), has formed the Center for Reliability Growth (CRG), which develops critical tools, methodologies, policies, formal guidance, and educational materials needed to help acquisition programs to achieve their required reliability during the acquisition process. The reliability improvements achieved for major weapon systems will translate into billions of dollars in operating and support cost savings over the life cycle.						
AMSAA's unique analytical capabilities are supporting AEC to assess and determine the essential analytical requirements to enhance Army evaluations and reduce extensive testing. AMSAA's support in this area improves evaluation products and results in better materiel solutions to the Warfighter. AMSAA assists in systems evaluations which support various Acquisition Category (ACAT) materiel system decisions, and provides quick response analyses in support of rapid initiatives for Current Operations.						
As the Army's center for materiel systems analysis, AMSAA provides the technical capability to support Army and DoD decision makers throughout the entire acquisition process in responding to analytical requirements across the full spectrum of materiel. AMSAA's unique in-house, consistent, integrated analytical capability is a critical asset that provides Army leadership with timely, independent, unbiased, reliable, and high quality analysis to support complex decisions required for Current Operations and the development of the Future Force (Strategic Portfolio Analysis Review (SPAR), Force 2025 and beyond). AMSAA's integrated set of skills and tools are focused on its core mission to develop and deliver systems analysis requirements critical in supporting Army decisions which will enable and sustain Materiel Readiness to meet the needs of the Warfighter.						
B. Program Change Summary (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget		21.677	21.890	21.754	-	21.754
Current President's Budget		21.510	21.890	21.226	-	21.226
Total Adjustments		-0.167	0.000	-0.528	-	-0.528
• Congressional General Reductions		-0.002	-			
• Congressional Directed Reductions		-	-			
• Congressional Rescissions		-	-			
• Congressional Adds		-	-			
• Congressional Directed Transfers		-	-			
• Reprogrammings		-	-			
• SBIR/STTR Transfer		-0.165	-			
• CivPay Adjustments		-	-	-0.528	-	-0.528

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605706A / Materiel Systems Analysis				Project (Number/Name) 541 / Materiel Sys Analysis			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
541: Materiel Sys Analysis	-	21.510	21.890	21.226	-	21.226	21.524	21.926	21.939	22.164	0.000	152.179
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds Department of the Army (DA) civilians at the United States (US) Army Materiel Systems Analysis Activity (AMSAA) to conduct responsive and effective materiel systems analysis in support of senior Army decision making for equipping the U.S. Army. AMSAA conducts systems and engineering analyses to support Army decisions in technology; materiel acquisition; and the design, development, fielding, and sustainment of Army weapon/materiel systems. As part of this mission, AMSAA develops and certifies system level performance data used in Army studies, and develops item-level performance methodology and Models and Simulations (M&S).

AMSAA exercises Headquarters Department of the Army (HQDA) responsibility for developing, maintaining, improving, verifying, validating, and accrediting item-level performance data and M&S for combat effects and logistics. This includes the development and maintenance of common data formats. In support of its materiel systems analysis mission, AMSAA analyzes the performance and combat effectiveness of conceptual, developmental, and fielded systems. Unique models and methodologies have been developed to predict critical performance variables, such as weapon accuracy, target acquisition, rate of fire, probability of inflicting catastrophic damage, personnel and vehicle survivability, mobility, and system reliability. AMSAA generates performance and effectiveness measures and ensures their standard use across major Army and Joint studies. AMSAA conducts and supports various systems analysis efforts across the entire materiel system life cycle, such as: Analysis of Alternatives (AoAs); system cost/performance trade-offs and early technology trade-offs to inform system and acquisition program risk assessments; weapons/systems mix analyses; business case analyses; cost benefit analyses; requirements analyses; technology insertion studies; reliability growth studies; Physics of Failure (PoF) analyses; and analytical support for Test and Evaluation. These analyses are used by leadership within HQDA (both Army Staff and Assistant Secretaries in the HQDA Secretariat); Army Materiel Command; Army Research, Development and Engineering Command; Training and Doctrine Command; Army Test and Evaluation Command; Program Executive Officers/Project Managers; and the Office of Secretary of Defense (OSD)/Department of Defense (DoD). AMSAA analyses and data are used by these organizations in making acquisition, procurement, and logistics decisions in order to provide quality equipment and procedures to the Soldier, along with enhancing readiness for the Current and Future Force.

AMSAA's M&S capabilities support the development, linkage, and accreditation of live, virtual, and constructive simulations, and provide unique tools that support systems analysis of individual systems and the combined-arms environment. AMSAA maintains a significant number of models and simulations, most of which were developed in-house to address specific analytical requirements. This M&S infrastructure provides a hierarchical modeling process that is unique to AMSAA and allows for a comprehensive performance and effectiveness prediction capability that can be utilized to make trade-off and investment decisions prior to extensive and expensive hardware testing of proposed systems/technologies for the readiness of the Current and Future Force.

AMSAA exercises HQDA responsibility for Army reliability methodology development. In this role, as the Army's Executive Agent for reliability and maintainability standardization improvement, AMSAA develops and implements reliability and maintainability reform initiatives that support acquisition decisions and life cycle management. AMSAA develops and applies engineering approaches that assess the reliability of Army materiel and also provides recommendations on ways to improve reliability, thereby reducing logistics footprints and life cycle costs, and extending failure-free periods for deployed equipment. AMSAA's electronic and mechanical

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605706A / Materiel Systems Analysis	Project (Number/Name) 541 / Materiel Sys Analysis		
PoF program pioneered the Army's involvement in utilizing computer-aided engineering tools in the analysis of root-cause failure mechanisms at the component level during the system design process. AMSAA's reliability engineering and PoF tools/analyses have been used extensively to support the design improvement of developmental and fielded systems used in Current Operations, resulting in improved reliability, reduced Operating and Support costs, and reduced logistics expenditures and footprints. AMSAA, in conjunction with the Army Evaluation Center (AEC), has formed the Center for Reliability Growth (CRG), which develops critical tools, methodologies, policies, formal guidance, and educational materials needed to help acquisition programs to achieve their required reliability during the acquisition process. The reliability improvements achieved for major weapon systems will translate into billions of dollars in operating and support cost savings over the life cycle. AMSAA's unique analytical capabilities are supporting AEC to assess and determine the essential analytical requirements to enhance Army evaluations and reduce extensive testing. AMSAA's support in this area improves evaluation products and results in better materiel solutions to the Warfighter. AMSAA assists in systems evaluations which support various Acquisition Category (ACAT) materiel system decisions, and provides quick response analyses in support of rapid initiatives for Current Operations. As the Army's center for materiel systems analysis, AMSAA provides the technical capability to support Army and DoD decision makers throughout the entire acquisition process in responding to analytical requirements across the full spectrum of materiel. AMSAA's unique in-house, consistent, integrated analytical capability is a critical asset that provides Army leadership with timely, independent, unbiased, reliable, and high quality analysis to support complex decisions required for Current Operations and the development of the Future Force (Strategic Portfolio Analysis Review (SPAR), Force 2025 and beyond). AMSAA's integrated set of skills and tools are focused on its core mission to be responsive to the breadth and depth of systems analysis requirements critical in supporting the Secretary of the Army and the Army Materiel Command priorities to develop and deliver Readiness to enable and sustain the Current and Future Force.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Title: Materiel Systems Analysis			21.510	21.890	21.226
Description: These funds are used by AMSAA to conduct various materiel systems analysis efforts in support of senior Army decision makers during fiscal years 2017 through 2023. AMSAA will continue to conduct analyses, materiel systems performance data generation and certification, methodology development, M&S development, and verification, validation, and accreditation. The accomplishments include performance and combat effectiveness analyses of materiel systems and technology base programs for the Department of Army Secretariat/Staff; the Army Materiel Command; the Research, Development and Engineering Command; Program Executive Officers/Program Managers; the Training and Doctrine Command; the Army Service Component Commands; the Army Test and Evaluation Command; and the Office of the Secretary of Defense. These analyses form the basis for AMSAA to successfully conduct Analysis of Alternatives (AoAs), system cost/performance tradeoffs, early technology trade-offs, weapons/systems mix analyses, system risk assessments, business case analyses, cost benefit analyses, requirements analyses, technology insertion studies, reliability growth studies, Physics of Failure (PoF) analyses and analytical support for Test and Evaluation.					
FY 2018 Plans: Critical analyses from AMSAA will continue to support key Army acquisition milestone decision reviews. AMSAA will support Army conceptual and developmental Acquisition Category ((ACAT) 1, ACAT 2, ACAT 3, and ACAT 4) programs, including					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605706A / <i>Materiel Systems Analysis</i>		Project (Number/Name) 541 / <i>Materiel Sys Analysis</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
but not limited to: Future Vehicle Lift, Vehicle Protection Suite, Maneuver Short Range Air Defense, Cannon ? Delivered Area Effects Munition, Biometrics Enabling Capabilities, Unified Network Operations, and Squad ? Multipurpose Equipment Transport. AMSAA will also enhance analysis capabilities in the cybersecurity and Cyber Electromagnetic Activities (CEMA) areas by developing models and capabilities to address cybersecurity and software risk factors for acquisition programs. Additionally, AMSAA will support multiple analysis efforts in support of the Army Secretariat and Staff. This includes directly participating in and providing analytical products for Army Requirements Oversight Councils (AROCs) and Army Systems Acquisition Review Councils (ASARCs) to assist senior leaders in key acquisition strategy and life cycle decisions for a variety of materiel systems/programs. AMSAA will also provide analytical support to modify Test and Evaluation (T&E) planning efforts, reduce testing through the use of modeling and simulation, and provide software reliability and analysis capabilities to support T&E. Further, AMSAA will conduct follow-on studies for major Army programs undergoing engineering change proposals and continue to provide essential certified weapons system performance data for all major Army studies. AMSAA?s technical work program relating to Analysis of Alternatives (AoA) (providing analytic input and certified data, as well as leading specified AoAs), Business Case Analyses, Cost Benefit Analyses, and Risk Assessments will continue at a high level (similar to fiscal year (FY) 2016 and FY2017). In addition to support for ACAT 1 and ACAT 2 programs, AMSAA is anticipating an increase in analytical support to Army ACAT 3 and ACAT 4 systems due to budget restrictions and financial limitations. AMSAA will continue efforts in support of the Army Center for Reliability Growth (CRG), as well as efforts on current operations related tasks, analyses, and model enhancements. AMSAA will continue to enhance its comprehensive set of system performance data and essential verified and validated item/system level methodologies, tools, and models and simulations to conduct materiel system performance analysis. AMSAA?s analysis capabilities and products will enable Senior Leaders to properly shape and influence acquisition policy, procedures, and materiel solutions and increase readiness for our Current and Future Force. FY 2019 Plans: The US Army Materiel Systems Analysis Activity (AMSAA) will continue to provide critical analyses and data to support key Army acquisition milestone decisions and reviews. AMSAA will continue to support Army conceptual and developmental Acquisition Category ((ACAT) 1, ACAT 2, ACAT 3, and ACAT 4) programs, including but not limited to: Family of Unmanned Aircraft Systems, Cyberspace Situational Understanding, Enhanced Heavy Equipment Transport System, Big Data Initiatives, and Cyber Electromagnetic Activities (CEMA)/Electronic Warfare (EW). AMSAA will further develop and enhance Cyber, Air & Missile Defense, and life cycle cost analytic capabilities to ensure more robust analysis of potential capabilities to properly equip the Current and Future Force. Additionally, AMSAA will ensure modeling and simulation readiness by properly updating and sustaining key analytic tools and models. AMSAA will continue to support a variety of trade-space efforts and analyses in support of the Army Secretariat and Staff. This will include directly participating in and providing analytical products for Army Requirements Oversight Councils (AROCs) and Army Systems Acquisition Review Councils (ASARCs) to assist senior leaders in key acquisition strategy and life cycle decisions for a variety of materiel systems/programs. AMSAA will also provide analytical support to modify Test and Evaluation (T&E) planning efforts, reduce testing through the use of modeling and simulation, and provide software analysis and reliability capabilities to support T&E. AMSAA will conduct follow-on studies for major Army programs undergoing					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605706A / <i>Materiel Systems Analysis</i>	Project (Number/Name) 541 / <i>Materiel Sys Analysis</i>		
B. Accomplishments/Planned Programs (\$ in Millions) engineering change proposals and continue to provide essential certified weapons system performance data for all major Army studies. AMSAAs technical work program relating to Analysis of Alternatives (AoAs) (providing analytic input and certified data, as well as leading specified AoAs), Business Case Analyses, and Cost Benefit Analyses and Risk Assessments will continue at a high level (similar to fiscal year (FY) 2017 and FY2018). AMSAA will continue efforts in support of the Army Center for Reliability Growth (CRG). Moreover, AMSAA will continue to develop and enhance its comprehensive set of system performance data and essential verified and validated item/system level methodologies, tools, and models and simulations to conduct materiel system performance analysis. This will insure accurate and up-to-date analytical products are provided across the full spectrum of Army capability/commodity areas. Overall, AMSAA's analysis capabilities and products will enable Senior Leaders to properly shape and influence acquisition policy, procedures, and materiel solutions and increase readiness for our Current and Future Force. <i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> The delta in AMSAA's funding is due to directed Congressional reductions and/or inflation.		FY 2017	FY 2018	FY 2019
Accomplishments/Planned Programs Subtotals		21.510	21.890	21.226
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605709A / Exploitation of Foreign Items							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	12.415	12.684	13.026	-	13.026	13.246	13.511	13.883	14.161	0.000	92.926
C28: Acq/Exploit Threat Items (MIP)	-	12.415	12.684	13.026	-	13.026	13.246	13.511	13.883	14.161	0.000	92.926

A. Mission Description and Budget Item Justification

This Program Element (PE) provides for the acquisition, exploitation, and inventory of foreign ground materiel with potential advanced technology threats to United States (U.S.) systems, as well as emerging and destructive threats such as cyber vulnerabilities, biometric systems, and evolving improvised explosive devices. The primary aim of the PE is to maximize the efficiency of research and development for force and materiel development by reducing the uncertainties associated with these threats. The PE also answers scientific and technical intelligence requirements, provides materiel for realistic testing and training, and aids in the development of countermeasures to threat systems, materiel, and technologies. Operations have increased the amount of captured threat materiel that require immediate exploitation to develop countermeasures and force protection measures for US forces. Acquisition and exploitation are executed according to Army Foreign Materiel Program (FMP) Plan prioritization and with the approval of the Army Deputy Chief of Staff for Intelligence (G2).

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	12.415	12.684	13.026	-	13.026
Current President's Budget	12.415	12.684	13.026	-	13.026
Total Adjustments	0.000	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605709A / <i>Exploitation of Foreign Items</i>				Project (Number/Name) C28 / <i>Acq/Exploit Threat Items (MIP)</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
C28: <i>Acq/Exploit Threat Items (MIP)</i>	-	12.415	12.684	13.026	-	13.026	13.246	13.511	13.883	14.161	0.000	92.926
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides for the acquisition, exploitation, and inventory of foreign ground materiel with potential advanced technology threats to United States (US) systems, as well as emerging and destructive threats such as cyber vulnerabilities, biometric systems, and evolving improvised explosive devices. The primary aim of the Project is to maximize the efficiency of research and development for force and materiel development by reducing the uncertainties associated with these threats. The Project also answers scientific and technical intelligence requirements, provides materiel for realistic testing and training, and aids in the development of countermeasures to threat systems, materiel, and technologies. Operations have increased the amount of captured threat materiel that require immediate exploitation to develop countermeasures and force protection measures for US forces. Acquisition and exploitation are executed according to Army Foreign Materiel Program (FMP) Plan prioritization and with the approval of the G2.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Army Foreign Materiel Program (FMP) Acquisition	4.097	4.186	4.298
Description: This effort provides for the acquisition of foreign ground materiel with potential advanced technology threats to US systems, as well as emerging and destructive threats such as cyber vulnerabilities, biometric systems, and evolving improvised explosive devices. The primary aim of the effort is to maximize the efficiency of research and development for force and materiel development by reducing the uncertainties associated with these threats. The effort also answers scientific and technical intelligence requirements, provides materiel for realistic testing and training, and aids in the development of countermeasures to threat systems, materiel, and technologies. Operations have increased the amount of captured threat materiel that require immediate exploitation to develop countermeasures and force protection measures for US forces. Acquisition and exploitation are executed according to Army FMP Plan prioritization and with the approval of the G2.			
FY 2018 Plans: Conduct Foreign Materiel Acquisition (FMA) of threat related foreign ground materiel systems and state-of-the-art technologies of military significance.			
FY 2019 Plans: Will conduct Foreign Materiel Acquisition (FMA) of threat related foreign ground materiel systems and state-of-the-art technologies of military significance.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605709A / <i>Exploitation of Foreign Items</i>	Project (Number/Name) C28 / <i>Acq/Exploit Threat Items (MIP)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Inflation adjustments.			
Title: Army Foreign Materiel Program (FMP) Exploitation Description: This effort provides for the exploitation and inventory of foreign ground materiel with potential advanced technology threats to US systems, as well as emerging and destructive threats such as cyber vulnerabilities, biometric systems, and evolving improvised explosive devices. The primary aim of the effort is to maximize the efficiency of research and development for force and materiel development by reducing the uncertainties associated with these threats. The effort also answers scientific and technical intelligence requirements, provides materiel for realistic testing and training, and aids in the development of countermeasures to threat systems, materiel, and technologies. Operations have increased the amount of captured threat materiel that require immediate exploitation to develop countermeasures and force protection measures for US forces. Acquisition and exploitation are executed according to Army FMP Plan prioritization and with the approval of the G2. FY 2018 Plans: Conduct Foreign Materiel Acquisition of threat related foreign ground materiel systems and state-of-the-art technologies of military significance. FY 2019 Plans: Will conduct Foreign Materiel Acquisition of threat related foreign ground materiel systems and state-of-the-art technologies of military significance. FY 2018 to FY 2019 Increase/Decrease Statement: Inflation adjustments.		8.318	8.498
Accomplishments/Planned Programs Subtotals		12.415	12.684
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support	PE 0605712A / Support of Operational Testing											
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	49.580	51.040	52.718	-	52.718	53.472	54.944	56.027	56.711	0.000	374.492
001: ATEC Joint Tests And Follow-On Test & Eval	-	0.265	0.449	0.285	-	0.285	0.294	0.310	0.300	0.321	0.000	2.224
V02: ATEC Activities	-	49.315	50.591	52.433	-	52.433	53.178	54.634	55.727	56.390	0.000	372.268

Note

Beginning in Fiscal Year (FY) 2017, Army Joint Test Element (JTE) was realigned from Program Element (PE) 0605898A (Management HQ - R&D) / Project M65 (Army Test and Evaluation Command) to PE 0605712A (Support of Operational Testing) / Project 001 (ATEC Joint Tests And Follow-On Test and Eval).

A. Mission Description and Budget Item Justification

This Program Element (PE) provides resources to the Army Test and Evaluation Command (ATEC) to operate the Army Joint Test Element (JTE) and the Army's Operational Test Command (OTC). JTE examines Joint Service, Combatant Command (COCOM) and Department of Defense (DoD) agencies' mission gaps, tactics and doctrine, resulting in the development of Tactics, Techniques and Procedures (TTP), Concept of Operations (CONOPS) and assessment documents. Products are developed through operational non-materiel solutions to urgent, specific, Joint Warfighter problems. OTC conducts independent operational tests that provide significant data to Army decision-makers on key Army systems and concepts. This PE finances recurring costs for OTC that are essential for conducting realistic and continuous testing in the critical areas of equipment, doctrine, force design and training. These recurring costs include civilian pay, requirements for test support contracts, temporary duty, training, supplies and equipment.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	49.684	51.040	54.179	-	54.179
Current President's Budget	49.580	51.040	52.718	-	52.718
Total Adjustments	-0.104	0.000	-1.461	-	-1.461
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.103	-			
• Adjustments to Budget Years	-	-	-1.461	-	-1.461
• FFRDC Transfer	-0.001	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605712A / Support of Operational Testing				Project (Number/Name) 001 / ATEC Joint Tests And Follow-On Test & Eval			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
001: ATEC Joint Tests And Follow-On Test & Eval	-	0.265	0.449	0.285	-	0.285	0.294	0.310	0.300	0.321	0.000	2.224
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning in Fiscal Year (FY) 2017, Army Joint Test Element (JTE) moved from PE 0605898A (Management HQ - R&D) / Project M65 (Army Test and Evaluation Command) to PE 0605712A (Support of Operational Testing) / Project 001 (ATEC Joint Tests And Follow-On Test and Eval).

A. Mission Description and Budget Item Justification

This Project provides funding for the Army JTE which examines Joint Service, Combatant Command (COCOM) and Department of Defense (DoD) agencies' mission gaps, tactics and doctrine, resulting in the development of Tactics, Techniques and Procedures (TTP), Concept of Operations (CONOPS) and assessment documents. Products are developed through operational non-materiel solutions to urgent, specific, Joint Warfighter problems. The JTE coordinates and develops nominations for Quick Reaction Tests (QRTs) and Joint Feasibility Studies (JFS); serves as the Operational Test Agency (OTA) for Army-led QRTs; and coordinates resources to support Joint Feasibility Studies and chartered Joint Tests (JT) under the Joint Test Unit (JTU) assigned to the Army test and Evaluation Command (ATEC) as the joint OTA. Mission support for JTE includes supporting two Joint Tests under the Joint Test program, and assigned special projects. ATEC provides military resource support to Nellis Air Force Base, Suffolk VA, United States Pacific Command (USPACOM) J81 (Hawaii), and Marine Corps Warfighter Laboratory (Quantico, VA) with Officer and Non-Commissioned Officer (NCO) support. JTE supports Joint Tests until these Office of the Secretary of Defense (OSD) chartered projects are completed and transitioned to the respective Sponsoring COCOM.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Army Joint Test Element (JTE) Management Support	0.265	0.449	0.285
Description: Funds the civilian salaries and related non-labor requirements that support the JTE.			
FY 2018 Plans: Continue to fund civilian labor and non-labor requirements such as supplies and travel in support of JTE initiatives, program support from remote JT stations and COCOM engagements.			
FY 2019 Plans: Will fund civilian labor and non-labor requirements such as supplies and travel in support of JTE initiatives, program support from remote JT stations and COCOM engagements.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605712A / Support of Operational Testing		Project (Number/Name) 001 / ATEC Joint Tests And Follow-On Test & Eval
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Decrease due to changes in funding level.				
Accomplishments/Planned Programs Subtotals		0.265	0.449	0.285
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				
E. Performance Metrics				
N/A				

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605712A / Support of Operational Testing				Project (Number/Name) V02 / ATEC Activities			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
V02: ATEC Activities	-	49.315	50.591	52.433	-	52.433	53.178	54.634	55.727	56.390	0.000	372.268
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project provides funding to ATEC to operate the Operational Test Command (OTC) which conducts independent operational tests that provide significant data to Army decision makers on key Army systems and concepts. This Project finances recurring costs for OTC that are essential for conducting realistic and continuous testing in the critical areas of equipment, doctrine, force design and training. These recurring costs include civilian pay, requirements for test support contracts, temporary duty, training, supplies and equipment.												
OTC consists of three forward Test Directorates (Airborne and Special Operations Test Directorate, Fort Bragg, North Carolina; Air Defense Artillery Test Directorate, Fort Bliss, Texas; and the Fires Test Directorate, Fort Sill, Oklahoma) together with four other Test Directorates (Aviation; Maneuver; Mission Command; Maneuver Support and Sustainment) at Ft Hood, Texas. These activities support the development and fielding cycle of all Army acquisition programs including rapid fielding initiatives. The primary mission of these test directorates is to perform detailed planning, execution, and reporting of Initial Operational Test and Evaluation (IOTE), Limited User Test (LUT), and Force Development Test and Experimentation (FDTE). OTC conducts operational tests required by public law (Title 10 USC 2399) that provide significant data to the Army decision makers on key Army systems and concepts.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Operational Test Command (OTC) Activities									49.315	50.591	52.433	
Description: OTC operational costs including: civilian pay, support contracts, temporary duty, training, supplies and equipment for subordinate elements of the Operational Test Command.												
FY 2018 Plans: Operational costs to include civilian pay, support contracts, temporary duty, training, supplies and equipment for the Operational Test Command.												
FY 2019 Plans: Operational costs to include civilian pay, support contracts, temporary duty, training, supplies and equipment for the Operational Test Command.												
FY 2018 to FY 2019 Increase/Decrease Statement: Minor change due to routine program adjustments.												
Accomplishments/Planned Programs Subtotals									49.315	50.591	52.433	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605712A / Support of Operational Testing	Project (Number/Name) V02 / ATEC Activities
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army</i> / BA 6: <i>RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605716A / <i>Army Evaluation Center</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	55.460	56.246	57.049	-	57.049	58.152	60.085	62.240	57.993	0.000	407.225
302: <i>Army Evaluation Center</i>	-	55.460	56.246	57.049	-	57.049	58.152	60.085	62.240	57.993	0.000	407.225

A. Mission Description and Budget Item Justification

This Program Element (PE) provides the resources to operate the Army Evaluation Center (AEC) which is responsible for all assigned developmental and independent operational evaluation of Army materiel, information and acquisition systems, an inherently governmental mission. AEC assists the Chief of Staff of the Army decision making process by supporting the Army Requirements Oversight Council (AROC) and the Strategic Portfolio Analysis Review (SPAR) processes. AEC determines impacts to readiness through Human Systems Integration (HSI), Unit Systems Integration (USI), and Army Systems Integration (ASI), DOTMLPF-P impacts, integrated suitability reviews (ISR) and operational suitability reviews (OSR) in partnership with the Deputy Assistant Secretary of the Army for Acquisition Policy and Logistics (DASA APL). AEC evaluates ballistics survivability and lethality missions, adversarial assessments/threat computer network operations, cooperative vulnerability and penetration assessments (CVPA) and electronic warfare (EW) (attack, support) countermeasures in support of the National Defense Authorization Act (NDAA) 2016 Section 1647, Establishment of Cybersecurity and Electromagnetic Affects (CEMA). AEC manages, plans, and executes Information Assurance (IA) operational assessments during annual Combatant Command and Army Service exercises in support of the congressionally mandated Office of the Secretary of Defense Director, Operational Test and Evaluation (OSD DOT&E) assessment, and performs the operational test agency (OTA) duties for the Ballistic Missile Defense System.

This PE funds direct civilian labor and minimum non-labor requirements to include: Temporary Duty (TDY), personnel training, career development, supplies and equipment, hardware, software, and other external Other Government Agency (OGA) support as well as methodology development required to evaluate emerging technologies and instrumentation requirements.

AEC consists of seven directorates (Aviation-Fires Evaluation Directorate, Ballistic Missile Defense (BMD) Evaluation Directorate (funded by the Missile Defense Agency (MDA)), Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Evaluation Directorate, Integrated Suitability & Methodology Directorate, Mounted Systems Evaluation Directorate, Soldier & Support System Evaluation Directorate and Survivability Evaluation Directorate) and a headquarters element. AEC receives staff services from the Army Test and Evaluation Command Headquarters (ATEC HQ). The primary competencies of these directorates is to: independently evaluate effectiveness, suitability, survivability; determine if Program Management (PM) and user directed requirements are met; direct the test strategy; and verify system safety.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		PE 0605716A / Army Evaluation Center			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	55.905	56.246	58.463	-	58.463
Current President's Budget	55.460	56.246	57.049	-	57.049
Total Adjustments	-0.445	0.000	-1.414	-	-1.414
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.439	-			
• Adjustments to Budget Years	-	-	-1.414	-	-1.414
• FFRDC Transfer	-0.006	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605716A / Army Evaluation Center				Project (Number/Name) 302 / Army Evaluation Center			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
302: Army Evaluation Center	-	55.460	56.246	57.049	-	57.049	58.152	60.085	62.240	57.993	0.000	407.225
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides the resources to operate the Army Evaluation Center (AEC) which is responsible for all assigned developmental and independent operational evaluation of Army materiel, information and acquisition systems, an inherently governmental mission. AEC assists the Chief of Staff of the Army decision making process by supporting the Army Requirements Oversight Council (AROC) and the Strategic Portfolio Analysis Review (SPAR) processes. AEC determines impacts to readiness through Human Systems Integration (HSI), Unit Systems Integration (USI), and Army Systems Integration (ASI), DOTMLPF-P impacts, integrated suitability reviews (ISR) and operational suitability reviews (OSR) in partnership with the Deputy Assistant Secretary of the Army for Acquisition Policy and Logistics (DASA APL). AEC evaluates ballistics survivability and lethality missions, adversarial assessments/threat computer network operations, cooperative vulnerability and penetration assessments (CVPA) and electronic warfare (EW) (attack, support) countermeasures in support of the National Defense Authorization Act (NDAA) 16 Section 1647, Establishment of Cybersecurity and Electromagnetic Effects (CEMA). AEC manages, plans, and executes Information Assurance (IA) operational assessments during annual Combatant Command and Army Service exercises in support of the congressionally mandated Office of the Secretary of Defense Director, Operational Test and Evaluation (OSD DOT&E) assessment, and performs the operational test agency (OTA) duties for the Ballistic Missile Defense System.

This Project funds direct civilian labor and minimum non-labor requirements to include: Temporary Duty (TDY), personnel training, career development, supplies and equipment, hardware, software, and other external Other Government Agency (OGA) support as well as methodology development required to evaluate emerging technologies and instrumentation requirements.

AEC consists of seven directorates (Aviation-Fires Evaluation Directorate, Ballistic Missile Defense (BMD) Evaluation Directorate (funded by the Missile Defense Agency (MDA)), Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Evaluation Directorate, Integrated Suitability & Methodology Directorate, Mounted Systems Evaluation Directorate, Soldier & Support System Evaluation Directorate and Survivability Evaluation Directorate) and a headquarters element. AEC receives staff services from the Army Test and Evaluation Command Headquarters (ATEC HQ). The primary competencies of these directorates is to: independently evaluate effectiveness, suitability, survivability; determine if Program Management (PM) and user directed requirements are met; direct the test strategy; and verify system safety.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Army Evaluation Center (AEC)	55.460	56.246	57.049
Description: Provide integrated technical and operational evaluations and continuous evaluation of assigned weapon systems and major automated information systems for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. Develop the evaluation strategy, design technical and operational tests, and evaluate the test results to address the combat effectiveness, suitability, and survivability factors pertinent to the decision process, of hundreds of systems/programs across the Army, other services and agencies. Prepare integrated System Evaluation Plans and			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605716A / Army Evaluation Center	Project (Number/Name) 302 / Army Evaluation Center	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
conduct integrated technical and operational evaluations for all assigned systems. In support of Overseas Contingency Operations (OCO) and other real-world events, AEC continues to provide Capability & Limitation Reports and safety verification documents.			
FY 2018 Plans: Fund operational costs for AEC including civilian pay and non-labor costs (approximately 94% of AEC's total budget is civilian labor). Additionally, provide funding for the Underbody Blast Modeling and Simulation support that provides early identification of vehicle improvements that directly impact Soldier survivability; improves test design; provides additional evaluation data to support acquisition. Also, provide funding for the Center for Reliability and Growth in response to policies mandating Reliability Growth programs and periodic assessments for major systems. AEC is projected to support over 100 acquisition milestone decisions and will continue to provide Capability & Limitation Reports and safety verification documents to support real-world operations.			
FY 2019 Plans: Fund operational costs for AEC including civilian pay and non-labor costs (approximately 94% of AEC's total budget is civilian labor). Assist TRADOC in developing operational relevant, total system focused critical operational issues and criteria that can be evaluated. Develop and apply new techniques in data mining, data visualization and presentation of large data sets. Research and develop evaluation metrics for new and emerging technologies such as signature management and human cognition.			
FY 2018 to FY 2019 Increase/Decrease Statement: Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals		55.460	56.246
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army Date: February 2018

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605718A / Army Modeling & Sim X-Cmd Collaboration & Integ							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	7.653	1.829	2.801	-	2.801	2.527	2.574	2.667	3.872	0.000	23.923
S03: Analysis M&S Tools and Services	-	7.653	1.829	2.801	-	2.801	2.527	2.574	2.667	3.872	0.000	23.923

A. Mission Description and Budget Item Justification

This Program Element (PE) promotes the Army's Modeling and Simulation (M&S) strategy, defined by five guiding priorities: (1) formulate Army M&S policies; (2) develop and employ management processes for models, simulations and data; (3) develop M&S standards, architectures, networks and environments; (4) develop/employ new M&S tools and simulation technology; (5) develop an M&S workforce. Specifically, this PE focuses on priorities 3 and 4.

M&S Standards, Architectures, Networks and Environments: The consistent use of standards, architectures, networks and environments advances the goal of interoperability. The Army coordinates with Joint, Interagency, Intergovernmental, and Multinational (JIIM) partners along with industry and academia to develop/employ standards that promote collaboration and facilitate the sharing of tools, data and information. The Army oversees procedures and processes for the appropriate use of standards to foster common formats and increase M&S and data reuse. The Army ensures these standards, architectures, networks and environments are readily accessible and can be reliably applied by users.

M&S Tools and Simulation Technology: The Army must have credible M&S tools and data to support the full range of Army organizational missions and functional responsibilities. M&S results that are timely and credible enhance decision making. The Army must develop and accredit reliable M&S tools so that decision makers and senior leaders benefit from the results and thus support the continued development, integration and use of such tools. To ensure credibility and reliability of results, M&S managers, developers and users must make the capabilities, constraints, limitations and assumptions of their M&S tools readily accessible. PE 0605718A provides for the development and employment of tools in the form of models, simulations and data that support the full range of Army interests and deliver timely information to enhance effective decision making. Moreover, these tools can be documented, verified, validated and accredited for their intended purpose in order to provide timely, credible results.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0605718A / Army Modeling & Sim X-Cmd Collaboration & Integ			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	7.959	1.829	3.336	-	3.336
Current President's Budget	7.653	1.829	2.801	-	2.801
Total Adjustments	-0.306	0.000	-0.535	-	-0.535
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.302	-			
• Adjustments to Budget Years	-	-	-0.535	-	-0.535
• FFRDC Transfer	-0.004	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605718A / Army Modeling & Sim X- Cmd Collaboration & Integ				Project (Number/Name) S03 / Analysis M&S Tools and Services			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
S03: Analysis M&S Tools and Services	-	7.653	1.829	2.801	-	2.801	2.527	2.574	2.667	3.872	0.000	23.923
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project has two functions:												
Function 1 (Priority 3 of the "Army Modeling and Simulation (M&S) Strategy") -- Develop M&S standards, architectures, networks and environments that promote sharing, interoperability, access, and reliable application of tools, formats, data and information among/for users.												
Function 2 (priority 4 of the "Army M&S Strategy") -- Develop and improve tools and technology in the form of models, simulations and data that support the full range of Army interests and deliver timely information to enhance effective decision making. These tools can be documented, verified, validated and accredited for their intended purpose.												
Resources under Project S03 support the six M&S communities (Acquisition, Analysis, Experimentation, Intelligence, Test & Evaluation, Training) at the enterprise level through enabling efforts. These efforts include the following: (a) design models, simulations, data and tools that are resident within one organization but reusable and trusted by M&S users and specialists across the Army M&S enterprise; (b) leverage industry and academia; (c) promote interoperability within M&S and between M&S and operational capabilities.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Develop M&S standards, architectures, networks and environments									2.523	0.605	0.933	
Description: Develop M&S standards, architectures, networks and environments that promote sharing, interoperability, access, and reliable application of tools, formats, data and information among/for users.												
FY 2018 Plans: Fiscal Year (FY) 2018 funds are distributed among activities that promote the third priority of the Army M&S strategy: develop M&S standards, architectures, networks and environments. Specific FY 2018 plans include: a.) development of an open modular cyber simulation architecture, b.) development of cyber/electronic warfare effects on large scale simulation environments, c.) development of a universal terrain production architecture, d.) development of a tactical level cyber/electronic warfare modeling and simulation descriptive framework. FY2018 M&S standards, architectures, networks and environment plans were developed to maximize reuse across the six Army M&S-enabled communities.												
FY 2019 Plans:												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605718A / Army Modeling & Sim X- Cmd Collaboration & Integ	Project (Number/Name) S03 / Analysis M&S Tools and Services		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Fiscal Year (FY) 2019 funds will be distributed among activities that promote the third priority of the Army M&S Strategy: develop M&S standards, architectures, networks and environments. Specific FY 2019 plans include: a.) development and access to cyber/electronic warfare simulated environments, b.) development of an enhanced fires training and testing environment, c.) development of an Operational Environment (OE) signal architecture, d.) enhancement and access to a network modeling architecture that bridges multiple modeling and simulation environments. FY2019 M&S standards, architectures, networks and environment plans were developed to maximize reuse across the six Army M&S-enabled communities. FY 2018 to FY 2019 Increase/Decrease Statement: Increase in requirements.				
Title: Develop M&S tools and technology Description: Develop and improve tools and technology in the form of models, simulations and data that support the full range of Army interests and deliver timely information to enhance effective decision making. These tools can be documented, verified and validated for their intended purpose. FY 2018 Plans: Fiscal Year (FY) 2018 funds are distributed among activities that promote the fourth priority of the Army M&S strategy: develop M&S tools and technology. Specific FY 2018 plans include: a.) development of a cyber/electronic warfare effects tool within the Mission Command Information Systems (MCIS); b.) development of a signals and emissions model for sensor applications; c.) development of an aircraft thermal detection model; d.) development of a fires cumulative damage and small precision munitions model; e.) development of a world-wide terrain discovery and access tool. FY 2018 M&S tools and technology plans were developed to maximize reuse across the six Army M&S-enabled communities. FY 2019 Plans: Fiscal Year (FY) 2019 funds will be distributed among activities that promote the fourth priority of the Army M&S Strategy: develop M&S tools and technology. Specific FY 2019 plans include: a.) development of an Army Fires Community Army Effectiveness Model (AEM); b.) development of network modeling scenarios and models for the test/evaluation and analysis network communities; c.) update and enhance intelligence models for existing simulations and Mission Command Information Systems (MCIS). FY 2019 M&S tools and technology plans were developed to maximize reuse across the six Army M&S-enabled communities. FY 2018 to FY 2019 Increase/Decrease Statement: Planned progression of efforts.		5.130	1.224	1.868
Accomplishments/Planned Programs Subtotals		7.653	1.829	2.801

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605718A / Army Modeling & Sim X- Cmd Collaboration & Integ	Project (Number/Name) S03 / Analysis M&S Tools and Services
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605801A / Programwide Activities							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	50.971	55.060	60.942	-	60.942	62.163	62.964	64.069	68.257	0.000	424.426
EU9: Army Science Board	-	1.612	3.146	3.161	-	3.161	3.210	3.271	3.195	3.952	0.000	21.547
M02: Med Cmd Spt (Non-AMHA)	-	25.079	26.106	26.461	-	26.461	27.257	28.350	28.896	29.309	0.000	191.458
M15: ARI Mgmt/ADM Act	-	3.360	1.496	1.515	-	1.515	1.550	1.585	1.629	1.661	0.000	12.796
M16: Standardization Groups	-	2.858	3.416	3.796	-	3.796	3.949	3.882	3.868	4.437	0.000	26.206
M42: ARDEC Cmd/Ctr Support	-	2.965	4.095	7.319	-	7.319	7.419	7.458	7.612	7.446	0.000	44.314
M44: CECOM Cmd/Ctr Spt	-	1.685	2.427	4.575	-	4.575	4.569	4.565	4.916	5.070	0.000	27.807
M46: AMCOM Cmd/Ctr Spt	-	0.000	0.225	0.228	-	0.228	0.231	0.237	0.241	2.204	0.000	3.366
M47: TACOM Cmd/Ctr Spt	-	3.158	3.317	3.294	-	3.294	3.339	3.357	3.518	3.552	0.000	23.535
M55: Edgewood Chemical Biological Center	-	6.468	6.653	6.039	-	6.039	6.029	5.565	5.472	5.925	0.000	42.151
M58: SECOM CMD/CTR Spt	-	2.205	2.459	2.429	-	2.429	2.449	2.499	2.483	2.449	0.000	16.973
M76: Armament Group Support	-	1.581	1.720	2.125	-	2.125	2.161	2.195	2.239	2.252	0.000	14.273

A. Mission Description and Budget Item Justification

This Program Element (PE) supports the non-Army Management Headquarters Activity (non-AMHA) Research, Development, Test, and Evaluation (RDTE) functions incident to the local operation and management of United States (U.S.) Army Research, Development and Engineering Command (RDECOM) Research Development and Engineering Centers, not identifiable with specific research and development projects. Also supports the management and operation of multiple, globally-located RDECOM International Technology Centers (ITCs). The ITCs play an integral role in the U.S. Army efforts for international cooperative research, development and interoperability, and fulfill international memoranda of understanding requirements.

Programwide activities also include: Army Science Board studies; non-AMHA Medical Command support at the U.S. Army Medical Research and Materiel Command (USAMRMC); non-AMHA management and administrative functions at the U.S. Army Research Institute (ARI); and travel and administrative support to the North Atlantic Treaty Organization (NATO) Army Armaments Group (NAAG).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	51.822	55.060	62.044	-	62.044
Current President's Budget	50.971	55.060	60.942	-	60.942
Total Adjustments	-0.851	0.000	-1.102	-	-1.102
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.840	-			
• Adjustments to Budget Years	-	-	-1.102	-	-1.102
• FFRDC Transfer	-0.011	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605801A / Programwide Activities				Project (Number/Name) EU9 / Army Science Board			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
EU9: Army Science Board	-	1.612	3.146	3.161	-	3.161	3.210	3.271	3.195	3.952	0.000	21.547
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Army Science Board (ASB) is a federal advisory committee, organized under the Federal Advisory Committee Act (FACA) and the Government in the Sunshine Act, which provides the Secretary of the Army and Secretary of Defense with independent and transparent advice and recommendations on matters relating to scientific, technical, manufacturing, acquisition, logistics, and business management functions. The ASB dates to November 1951 when the Secretary of the Army, Honorable Frank Pace Jr., appointed twelve outstanding scientists and industrialists to a scientific advisory panel to assist him and the Army's leadership in creating an effective, economical, and progressive fighting force using existing technology and industrial resources. Three years later, this panel was expanded and officially designated the Army Scientific Advisory Panel (ASAP), with its first formal meeting held on November 16, 1954. In 1977, with the passage of FACA, the ASB was created to replace the ASAP.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Army Science Board (ASB)	1.612	3.146	3.161
Description: The ASB is a federal advisory committee, organized under the Federal Advisory Committee Act (FACA) and the Government in the Sunshine Act, which provides the Secretary of the Army and Secretary of Defense with independent and transparent advice and recommendations on matters relating to scientific, technical, manufacturing, acquisition, logistics, and business management functions. The ASB dates to November 1951 when the Secretary of the Army, Honorable Frank Pace Jr., appointed twelve outstanding scientists and industrialists to a scientific advisory panel to assist him and the Army's leadership in creating an effective, economical, and progressive fighting force using existing technology and industrial resources. Three years later, this panel was expanded and officially designated the Army Scientific Advisory Panel (ASAP), with its first formal meeting held on November 16, 1954. In 1977, with the passage of FACA, the ASB was created to replace the ASAP.			
FY 2018 Plans: Conduct four to six studies on behalf of the Secretary of the Army; likely in areas of Basic Science and Disruptive Technology; Weapons Systems; Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR); and Systems Engineering, Integrations, and Sustainment or other concerns related to the future of the force.			
FY 2019 Plans: Conduct four to six studies on behalf of the Secretary of the Army; likely in areas of Basic Science and Disruptive Technology; Weapons Systems; C4ISR; and Systems Engineering, Integrations, and Sustainment or other concerns related to the future of the force.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>	Project (Number/Name) EU9 / <i>Army Science Board</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Increase supports planned studies in accordance with senior leader priorities.			
Accomplishments/Planned Programs Subtotals		1.612	3.146
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605801A / Programwide Activities				Project (Number/Name) M02 / Med Cmd Spt (Non-AMHA)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M02: Med Cmd Spt (Non-AMHA)	-	25.079	26.106	26.461	-	26.461	27.257	28.350	28.896	29.309	0.000	191.458
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides funding for authorized civilian workforce performing medical research, development, acquisition management and oversight that support the medical research, development, test, and evaluation (RDTE) programs at the United States (U.S.) Army Medical Research and Materiel Command (USAMRMC), Fort Detrick, Maryland to: (1) perform planning, programming, and budgeting; (2) manage resources; and (3) ensure compliance with U.S. Food and Drug Administration (FDA) and other regulatory and safety requirements. It also provides for continued operations of contracting and acquisition management functions performed by the U.S. Army Medical Research Acquisition Activity (USAMRAA) in support of the USAMRMC Medical RDTE Program.

Additionally, this Project provides funding for the special immunization program (SIP). The SIP program provides FDA licensed vaccines and investigational new drug (IND) vaccines under informed consent to laboratory workers at the U.S. Army Medical Research Institute of Infectious Diseases, and to other military, government, or contractor personnel who may be at risk of exposure to highly hazardous pathogenic microorganisms or toxins.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Civilian Authorized Salaries and other operational requirements	25.079	26.106	26.461
Description: Funding was provided to USAMRMC for Medical Research Development Acquisition (RDA) Management and Oversight to include the payroll of civilians as well as nominal operating expense. Expertise helps establish and maintain the capabilities that Army medicine needs to sustain life, limb, and eyesight for our warfighters. Civilian labor performs centralized management of Medical RDA (many areas required by law and/or regulation) including animal & human research protections, health and safety compliance, environmental management, and FDA regulatory compliance, legal support (including intellectual property protection), quality assurance, contracting services, personnel management, and planning, programming, and budgeting, and execution management. Funding also supports the Army's portion of the SIP that protects individuals engaged in infectious disease research if exposed to pathogens or toxins.			
FY 2018 Plans: Will fund authorized civilian salaries and associated expenses (supplies, equipment, travel, etc) at USAMRMC and USAMRAA. Also, will provide regulatory, clinical monitoring and data support for the SIP. This program will provide non-licensed vaccines under FDA oversight to personnel at risk of exposure to selected infectious diseases.			
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>	Project (Number/Name) M02 / <i>Med Cmd Spt (Non-AMHA)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Will fund authorized civilian salaries and associated expenses (supplies, equipment, travel, etc) at USAMRMC and USAMRAA. Also, will provide regulatory, clinical monitoring and data support for the SIP. This program will provide non licensed vaccines under FDA oversight to personnel at risk of exposure to selected infectious diseases. <i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Revised economic assumptions.			
Accomplishments/Planned Programs Subtotals		25.079	26.106
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605801A / Programwide Activities				Project (Number/Name) M15 / ARI Mgmt/ADM Act			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M15: ARI Mgmt/ADM Act	-	3.360	1.496	1.515	-	1.515	1.550	1.585	1.629	1.661	0.000	12.796
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is the only Science and Technology (S&T) laboratory that conducts research to enhance the Soldier lifecycle (e.g., selection, assignment, training, leader development) and human relations (e.g. culture of dignity, respect, and inclusion). This Project supports the non-Army Management Headquarters Activity (non-AMHA) management and administrative functions to enable ARI to accomplish its research mission and includes activities such as budget execution, procurement oversight, RDTE program planning and evaluation, management control, security/safety, logistics, information technology, and personnel/manpower execution and oversight. ARI's behavioral and social science research provides effective non-materiel solutions to help the Army adjust to changes in force size and structure, a variety of mission demands and contexts, challenges in human relations, and budgetary constraints.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: ARI Management/Administrative Actions	3.360	1.496	1.515
Description: This effort supports the non-AMHA management and administrative functions to enable ARI to accomplish its research mission and includes activities such as personnel/manpower execution and oversight.			
FY 2018 Plans: Provide operation of management, administrative, personnel, budget, and support functions at a level consistent with Army and mission requirements to meet the needs of ARI as an Army Laboratory conducting the Army's personnel, training, leader development, and organizational performance research and development (R&D) program.			
FY 2019 Plans: Will provide operation of management, administrative, personnel, budget, and support functions at a level consistent with Army and mission requirements to meet the needs of ARI as an Army Laboratory conducting the Army's personnel, training, leader development, and organizational performance R&D program.			
FY 2018 to FY 2019 Increase/Decrease Statement: No programmatic change, increase due to inflation.			
Accomplishments/Planned Programs Subtotals	3.360	1.496	1.515

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605801A / Programwide Activities	Project (Number/Name) M15 / ARI Mgmt/ADM Act
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605801A / Programwide Activities				Project (Number/Name) M16 / Standardization Groups			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M16: Standardization Groups	-	2.858	3.416	3.796	-	3.796	3.949	3.882	3.868	4.437	0.000	26.206
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Project M16 supports nine International Technology Centers (formerly known as Standardization Groups) in North America, South America, Asia, and Europe for personnel, travel and overhead costs, leases on buildings, and mandatory permanent change of station.												
The mission of the International Technology Centers is to support the U.S. Army Rationalization, Standardization and Interoperability (RSI) mission around the globe as specified in Army Regulation (AR) 34-1 "Multinational Force Interoperability" and AR 70-41 "International Cooperative Research, Development and Acquisition (ICRDA)". ITCs represent the U.S. Army in their geographic areas of responsibility (AOR) with foreign ministries of defense on ICRDA programs. ITCs also facilitate U.S. Army interaction in their area of responsibility (AOR) with foreign non-governmental entities, such as foreign private industry and academia.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: International Technology Centers Management									2.858	3.416	3.796	
Description: This activity funds the U.S. Army Rationalization, Standardization, and Interoperability mission conducted by the nine International Technology Centers around the globe. These funds support the infrastructure, personnel and travel requirements to support the mission.												
FY 2018 Plans: Providing management and administrative functions at a level consistent with mission requirements and supports needs at the nine International Technology Centers.												
FY 2019 Plans: Will represent the U.S. Army's interests in engagements with foreign ministries of defense on International Cooperative Research, Development and Acquisition (RDA) programs. Will facilitate U.S. Army interaction with foreign non-government entities, such as foreign private industry and academia.												
FY 2018 to FY 2019 Increase/Decrease Statement: FY19 increase supports DA/Senior leader priorities.												
Accomplishments/Planned Programs Subtotals									2.858	3.416	3.796	
C. Other Program Funding Summary (\$ in Millions)												
N/A												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>	Project (Number/Name) M16 / <i>Standardization Groups</i>
C. Other Program Funding Summary (\$ in Millions) Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>				Project (Number/Name) M42 / <i>ARDEC Cmd/Ctr Support</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M42: ARDEC Cmd/Ctr Support	-	2.965	4.095	7.319	-	7.319	7.419	7.458	7.612	7.446	0.000	44.314
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 This Project supports the Non-AMHA functions incident to the local operation and management of the U.S. Army Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, NJ, not identifiable with specific research and development projects financed under other program elements.

Funds only select, critical, overarching functions that enable ARDEC to accomplish its research, development and engineering mission, to include ARDEC Headquarters staff, safety, physical security, anti-terrorism, operations security (OPSEC), information security and intelligence services.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Management Support	2.965	4.095	7.319
Description: ARDEC management / administrative efforts.			
FY 2018 Plans: Providing management and administrative functions at a level consistent with mission requirements and support needs at ARDEC.			
FY 2019 Plans: Will provide management and administrative functions at a level consistent with mission requirements and support needs at ARDEC.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY19 increase funds authorized civilian manpower labor, travel, training and supplies.			
Accomplishments/Planned Programs Subtotals	2.965	4.095	7.319

C. Other Program Funding Summary (\$ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 N/A

E. Performance Metrics
 N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>				Project (Number/Name) M44 / <i>CECOM Cmd/Ctr Spt</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M44: <i>CECOM Cmd/Ctr Spt</i>	-	1.685	2.427	4.575	-	4.575	4.569	4.565	4.916	5.070	0.000	27.807
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Supports the Non-AMHA functions incident to the local operation and management of the U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC), Aberdeen Proving Ground, MD, not identifiable with specific research and development projects financed under other program elements.

Funds only select, critical, overarching functions that enable CERDEC to accomplish its research, development and engineering mission, to include CERDEC Headquarters staff, resource management, human resources, safety, security, protocol, public affairs, information management, facility management and audit readiness.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Management Support Description: CERDEC management and administrative efforts. FY 2018 Plans: Providing management and administrative functions at a level consistent with mission requirements and support needs at CERDEC. FY 2019 Plans: Will provide management and administrative functions at a level consistent with mission requirements and support needs at CERDEC. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 increase funds authorized civilian manpower labor, travel, training and supplies.	1.685	2.427	4.575
Accomplishments/Planned Programs Subtotals	1.685	2.427	4.575

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>	Project (Number/Name) M44 / <i>CECOM Cmd/Ctr Spt</i>
E. Performance Metrics N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>				Project (Number/Name) M46 / <i>AMCOM Cmd/Ctr Spt</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M46: <i>AMCOM Cmd/Ctr Spt</i>	-	0.000	0.225	0.228	-	0.228	0.231	0.237	0.241	2.204	0.000	3.366
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
Beginning in Fiscal Year (FY) 2017, portions of Project M46 (Anti-Tamper effort) were realigned to Program Element (PE) 0602705A (Electronics and Electronic Devices) / Project H94 (Elec & Electronic Dev) and PE 0605024A (Anti-Tamper Technology Support) / Project FB1 (Anti-Tamper Technology Support).

A. Mission Description and Budget Item Justification
This Project supports the Non-AMHA functions incident to the local operation and management of the U.S. Army Aviation and Missile Research, Development and Engineering Center (AMRDEC), Redstone Arsenal, AL, not identifiable with specific research and development projects financed under other program elements.

Minimally funds select, critical, overarching functions in support of AMRDEC accomplishing its research, development and engineering mission.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Management Support	-	0.225	0.228
Description: AMRDEC management and administrative efforts.			
FY 2018 Plans: Providing management and administrative functions at a level consistent with mission requirements and support needs at AMRDEC.			
FY 2019 Plans: Will provide management and administrative functions at a level consistent with mission requirements and support needs at AMRDEC.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY19 funds the labor for one direct manpower authorization. Increase reflects Army civilian pay rate adjustment.			
Accomplishments/Planned Programs Subtotals	-	0.225	0.228

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605801A / Programwide Activities	Project (Number/Name) M46 / AMCOM Cmd/Ctr Spt
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>				Project (Number/Name) M47 / <i>TACOM Cmd/Ctr Spt</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M47: <i>TACOM Cmd/Ctr Spt</i>	-	3.158	3.317	3.294	-	3.294	3.339	3.357	3.518	3.552	0.000	23.535
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 This Project supports the Non-AMHA functions incident to the local operation and management of the United States (U.S.) Army Tank and Automotive Research, Development and Engineering Center (TARDEC), Warren, MI, not identifiable with specific research and development projects financed under other program elements.

 Funds only select, critical, overarching management functions that enable TARDEC to accomplish its research, development and engineering mission.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Management Support	3.158	3.317	3.294
Description: TARDEC management and administrative efforts.			
FY 2018 Plans: Providing management and administrative functions at a level consistent with mission requirements and support needs at TARDEC.			
FY 2019 Plans: Will provide management and administrative functions at a level consistent with mission requirements and support needs at TARDEC.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY19 increase reflects an adjustment to authorized Army civilian labor pay rates.			
Accomplishments/Planned Programs Subtotals	3.158	3.317	3.294

C. Other Program Funding Summary (\$ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 N/A

E. Performance Metrics
 N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>				Project (Number/Name) M55 / <i>Edgewood Chemical Biological Center</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M55: <i>Edgewood Chemical Biological Center</i>	-	6.468	6.653	6.039	-	6.039	6.029	5.565	5.472	5.925	0.000	42.151
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project supports the Non-AMHA functions incident to the local operation and management of the U.S. Army Edgewood Chemical Biological Center (ECBC), Aberdeen Proving Ground, MD, not identifiable with specific research and development projects financed under other program elements.

Funds only select, critical, overarching functions that enable ECBC to accomplish its mission to include the ECBC Headquarter staff, resource management, safety, and surety programs. In addition, this program includes the management and oversight of Army chemical surety operations as directed by DoD Instruction 5210.65, "Minimum Security Standards for Safeguarding Chemical Agents".

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Management Support Description: ECBC management and administrative efforts. FY 2018 Plans: Providing continued management and administrative functions at a level consistent with mission requirements and support needs at ECBC. FY 2019 Plans: Will provide continued management and administrative functions at a level consistent with mission requirements and support needs at ECBC. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 decrease reflects civilian affordability adjustment.	6.468	6.653	6.039
Accomplishments/Planned Programs Subtotals	6.468	6.653	6.039

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605801A / Programwide Activities	Project (Number/Name) M55 / Edgewood Chemical Biological Center
D. Acquisition Strategy N/A E. Performance Metrics N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>				Project (Number/Name) M58 / <i>SECOM CMD/CTR Spt</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M58: <i>SECOM CMD/CTR Spt</i>	-	2.205	2.459	2.429	-	2.429	2.449	2.499	2.483	2.449	0.000	16.973
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Supports the Non-AMHA functions incident to the local operation and management of the U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC), Natick, MA, not identifiable with specific research and development projects financed under other program elements.

Funds only select, critical, overarching functions that enable NSRDEC to accomplish its research, development and engineering mission, to include: Manpower/ Personnel, Intelligence/Security, Operations, Logistics, Training, Resource Management and Headquarter administrative staff.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: Management Support Description: NSRDEC management and administrative functions. FY 2018 Plans: Providing continued management and administrative functions at a level consistent with mission requirements and support needs at NSRDEC. FY 2019 Plans: Will provide continued management and administrative functions at a level consistent with mission requirements and support needs at NSRDEC. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 decrease reflects civilian affordability adjustment.	2.205	2.459	2.429
Accomplishments/Planned Programs Subtotals	2.205	2.459	2.429

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605801A / Programwide Activities	Project (Number/Name) M58 / SECOM CMD/CTR Spt
E. Performance Metrics N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605801A / Programwide Activities				Project (Number/Name) M76 / Armament Group Support			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M76: Armament Group Support	-	1.581	1.720	2.125	-	2.125	2.161	2.195	2.239	2.252	0.000	14.273
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The goal of this Project is to expand worldwide allied standardization and interoperability through cooperative R&D and technology sharing per Secretary of Defense guidance and especially in support of the U.S. Army. This Project partially funds the travel costs and administrative support (studies, analysis, interpretation, equipment, etc.) required to participate in international forums, such as the North Atlantic Treaty Organization (NATO) Army Armaments Group (NAAG), Defense Against Terrorism (DAT) and to pursue new cooperative R&D initiatives and international cooperative agreements such as memoranda of understanding. This Project also includes: the United States' share of costs of the NATO Civil Budget, Chapter IX, which funds the NATO Industrial Advisory Group (NIAG) and the Special Fund for Cooperative Planning (U.S. Army is Executive Agent for this NATO bill); partially funds the Five Power Senior National Representatives, Army (SNR (A)), the Technical Cooperative Program, Bilateral SNR(A)s, and Army armaments working groups with many nations.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Army Scientific Support NATO Army Armaments Group (NAAG) Description: Funds supported Army subject matter experts to attend scientific and technological exchange, meetings, demonstrations, and/or simulations having military application and mutual benefits to the U.S. and its Allies. FY 2018 Plans: Funds will support NAAG Army Subject Matter Experts' attendance at scientific and technological exchange, meetings, demonstrations, and/or simulations having military application and mutual benefits to the United States and its Allies. FY18 funding continues to fund different working/capability groups. FY 2019 Plans: Funds will support NAAG Army Subject Matter Experts' attendance at scientific and technological exchange, meetings, demonstrations, and/or simulations having military application and mutual benefits to the United States and its Allies. FY19 funding will continue to fund different working/capability groups. FY 2018 to FY 2019 Increase/Decrease Statement: Restoration of stable funding profile.	0.286	0.207	0.307
Title: Executive Agent Description: Funded the U.S. share of the Mandatory NATO Civil Budget, Chapter IX (Defense Support Programs). U.S. Army is Executive Agent for this Mandatory NATO bill. FY 2018 Plans:	1.295	1.513	1.818

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605801A / <i>Programwide Activities</i>	Project (Number/Name) M76 / <i>Armament Group Support</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Funds the United States' share of the NATO Civil Budget, Chapter IX (Defense Support Programs). U. S. Army is Executive Agent for this NATO bill. <i>FY 2019 Plans:</i> Will fund the United States' share of the NATO Civil Budget, Chapter IX (Defense Support Programs). U.S. Army is Executive Agent for this NATO bill. <i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Consistent increase reflects planned program objectives.			
Accomplishments/Planned Programs Subtotals		1.581	1.720
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army **Date:** February 2018

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605803A / Technical Information Activities							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	29.905	33.934	29.050	-	29.050	37.778	38.489	39.257	39.946	0.000	248.359
720: Tech Info Func Actv	-	6.095	5.866	4.780	-	4.780	5.295	5.405	5.563	5.670	0.000	38.674
727: Tech Info Activities	-	8.346	11.535	9.132	-	9.132	10.287	10.489	10.809	11.023	0.000	71.621
730: Pers & Trng Analys Act	-	1.965	2.232	1.346	-	1.346	2.244	2.291	2.354	2.401	0.000	14.833
731: Army High Performance Computing Centers	-	4.459	4.535	4.595	-	4.595	4.685	4.785	4.906	5.002	0.000	32.967
733: Acquisition Tech Act	-	3.500	3.760	3.529	-	3.529	9.278	9.402	9.345	9.470	0.000	48.284
C16: FAST	-	1.535	1.644	1.630	-	1.630	1.654	1.691	1.740	1.773	0.000	11.667
C18: BAST	-	0.959	1.061	0.895	-	0.895	1.076	1.096	1.129	1.151	0.000	7.367
DW3: Army Geospatial Enterprise Implementation	-	3.046	3.301	3.143	-	3.143	3.259	3.330	3.411	3.456	0.000	22.946

A. Mission Description and Budget Item Justification

This Program Element (PE) supports upgrading the accuracy, timeliness, availability, and accessibility of scientific, technical, and management information at all levels of the Army Research and Development (R&D) community. Management of this information is critical to achieve the goals established by the Army's Senior Leadership. Use of accurate and timely technical information is essential to successfully meeting the milestones required on the path to the future force, allowing Army Science and Technology (S&T) leadership to refine investment strategy and quickly react to emerging opportunities and issues. This PE includes initiatives to improve information derivation, storage, access, display, validation, transmission, distribution, and interpretation; to develop and enhance a single business model for Army S&T knowledge management information technology; to provide for Independent Review Team analysis of technology maturity as part of the Technology Area Readiness Assessment as required by Department of Defense (DoD) Instruction 5000.2 dated May 12, 2003 as well as the Army Science Board (ASB) (Projects 720 and 727). This PE addresses the need to increase the competitiveness and availability of scientific, engineering, and technical skills in the DoD and National workforce through outreach programs aimed at middle school through college students and teachers. By providing direct working experience for these students in Army laboratories, the PE expose these students to the working world of science and engineering (Project 729). Project 730 provides funding for assessments in attitudes and opinions, longitudinal trends in Soldier and leader perceptions, and emerging issues to provide senior Army leaders with information on Soldiers' perceptions to inform personnel policy and program decision-making concerning manpower, personnel, and training issues. Project 731 provides funding for support for Army high performance computing centers. Project 733 provides funding for improvements to the Army's acquisition process, while Project C16 supports combatant commanders and major Army commands by providing science advisors to address scientific and technical issues and by providing engineering teams to solve field Army technical problems. Finally, this PE funds studies by the Board on Army Science and Technology (BAST) (Project C18). Coordination of this PE with the other Services is achieved through inter-service working groups.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>

Work in this PE is performed by the Research, Development, and Engineering Command (RDECOM), Aberdeen Proving Ground, MD, the Army Research Institute for the Behavioral and Social Sciences (ARI), Ft. Belvoir, VA, the Army Corps of Engineers' Engineer Research and Development Center (ERDC), Vicksburg, MS, Medical Research and Materiel Command (MRMC), Ft. Detrick, MD, Space and Missile Defense Command (SMDC), Huntsville, AL, and the Information Management Office, Arlington, VA.

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	33.323	33.934	31.731	-	31.731
Current President's Budget	29.905	33.934	29.050	-	29.050
Total Adjustments	-3.418	0.000	-2.681	-	-2.681
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.330	-			
• SBIR/STTR Transfer	-1.074	-			
• Adjustments to Budget Years	-	-	-2.681	-	-2.681
• FFRDC Transfer	-0.014	-	-	-	-

Change Summary Explanation

Fiscal Year 2017 value represents \$2.33 Million in Below Threshold Reprogramming along with required Small Business Innovation Research reductions.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605803A / Technical Information Activities				Project (Number/Name) 720 / Tech Info Func Actv			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
720: Tech Info Func Actv	-	6.095	5.866	4.780	-	4.780	5.295	5.405	5.563	5.670	0.000	38.674
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project provides funding for technology transfer activities to support acquisition, storage, and utilization of technical information for both military and domestic applications. Effective exploitation of science and technology (S&T) information is critical to achieving the goals established by senior Army leadership. Activities include: Army support for Federal Laboratory Consortium (FLC) as required by Public Law; the Army Science Board; the Army Science Conference; S&T database management efforts; and administration of the Army's Small Business Innovation Research (SBIR) and Small Business Technology Transfer Program (STTR) in accordance with the Small Business Innovation Development Act of 1982, the Small Business Research and Development Enhancement Act of 1992 and subsequent reauthorizing legislation. Technology transfer activities make technical information available to both the public and private sectors to reduce duplication in Research and Development programs and to increase competitiveness in the United States (US) business community. Database management efforts support development of decision aids, databases, and automation support for the management and execution of the Army Research, Development, Test and Evaluation (RDTE) appropriation. In addition, this Project provides funding for patent legal expenses and fees for all United States (U.S.) Army Research, Development, and Engineering Command (RDECOM) subordinate commands and laboratories, as required by the Omnibus Budget Reconciliation Act. The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy. Work is performed by RDECOM, Aberdeen Proving Ground, MD and the US Army Research Laboratory (ARL), Adelphi, MD.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2017	FY 2018	FY 2019
Title: Provide Army Funding Support for Federal Laboratory Consortium as Required by Public Law 104-113										0.256	0.260	0.261
Description: Public Law 104-113 requires the Army to provide funding for the federal laboratory consortium which is a network of federal agencies that provide a platform where technologies can be strengthened and promoted to return dividends to our economy.												
FY 2018 Plans: Providing Army funding support for Federal Laboratory Consortium as required by Public Law 104-113.												
FY 2019 Plans: Will provide Army funding support for Federal Laboratory Consortium as required by Public Law 104-113.												
FY 2018 to FY 2019 Increase/Decrease Statement:												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>		Project (Number/Name) 720 / <i>Tech Info Func Actv</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Adjustment due to inflation.					
Title: Administrative Support for the Army's SBIR and STTR Programs			1.283	1.266	1.278
Description: Army SBIR and Army STTR programs. In 1982, Congress, through the Small Business Innovation Development Act (P.L. 97-219) established the SBIR program to foster the involvement of US based small businesses in federal research and development (R&D). The SBIR program is designed to increase the participation of small, high-technology firms in the federal R&D endeavor and give driven businesses the opportunity to provide innovative R&D solutions in response to critical Army needs. The STTR program expands the public/private sector partnership to include the joint venture opportunities for small business and the nation's premier nonprofit research institutions. The most important role of the STTR program is to foster the innovation necessary to meet the nation's scientific and technological challenges in the 21st century. The SBIR/STTR support services include program and technical advisory support services on a broad level. The Army SBIR/STTR Program Management Office mission requires synergized, integrated business solutions that concentrates on small business technological advances, and eliminates redundancy in a codified and consistent method that reduces confusion and ambiguity for the thousands of small businesses that participate in the SBIR and STTR programs.					
FY 2018 Plans: Providing the Army SBIR/STTR Program Offices with the resources necessary to execute Congressionally-mandated programs. The Army SBIR/STTR Program Offices procure program management and technical services required to support the programs. The support services include a broad range of program and technical assistance services such as programming; database support; drafting of letters, reports, newsletters, briefings, presentation materials and correspondence; analyses; documentation for record keeping and reporting; helpdesk; and web portal development and support. The services assist the Program Offices in planning, coordinating, implementing, and orchestrating SBIR/STTR functions to include current and new approaches, processes and procedures as required by United States Code, Title 15, Section 638, Fiscal Year 2012 National Defense Authorization Act, Public Laws 112-81, and in Public Laws 97-219, 99-443, 102-564 and 106-554.					
FY 2019 Plans: Will provide the Army SBIR/STTR Program Offices with the resources necessary to execute Congressionally-mandated programs. The Army SBIR/STTR Program Offices will procure program management and technical services required to support the programs. The support services will include a broad range of program and technical assistance services such as programming; database support; drafting of letters, reports, newsletters, briefings, presentation materials and correspondence; analyses; documentation for record keeping and reporting; helpdesk; and web portal development and support. The services will assist the Program Offices in planning, coordinating, implementing, and orchestrating SBIR/STTR functions to include current and new					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605803A / Technical Information Activities	Project (Number/Name) 720 / Tech Info Func Actv		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
approaches, processes and procedures as required by United States Code, Title 15, Section 638, Fiscal Year 2012 National Defense Authorization Act, Public Laws 112-81, and in Public Laws 97-219, 99-443, 102-564 and 106-554.				
FY 2018 to FY 2019 Increase/Decrease Statement: Adjustment due to inflation.				
Title: Provide Funding for Patent Fees and Patent Legal Expenses for U.S. Army Materiel Command (AMC) Commands and Laboratories Description: The Army Research Laboratory turns high-value Army S&T investments into patented technologies in an effort to convert research into jobs and innovations for the Warfighter. The funded efforts are used for patent fees and legal expenses required for the patent application process. FY 2018 Plans: Providing funding for patent fees and patent legal expenses for AMC commands and laboratories. FY 2019 Plans: Will provide funding for patent fees and patent legal expenses for AMC commands and laboratories. FY 2018 to FY 2019 Increase/Decrease Statement: Change in requirements and scope of the effort.		1.069	1.069	0.974
Title: Provide Funding for S&T Strategic Planning and Support Description: S&T strategic planning and support is a critical component to the overall Army mission as it reaffirms Army leadership guidance, reinforces commitment to basic research, and leverages a landscape of game-changing technologies that can provide future innovations and capabilities to the Warfighter. FY 2018 Plans: Providing funding for S&T Strategic Planning and Support. FY 2019 Plans: Will provide funding for S&T Strategic Planning and Support. FY 2018 to FY 2019 Increase/Decrease Statement: Change in requirements and scope of the effort.		0.326	0.332	0.277
Title: Administer S&T Database Computer Engineering Support Contract and Support RDECOM Databases S&T Management Support		3.161	2.939	1.990

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>	Project (Number/Name) 720 / <i>Tech Info Func Actv</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Description: The S&T database computer engineering support contract provides management support of RDECOM's databases as well as supports the development of the Army Research Laboratory S&T information activities to include campaign plans envisioned to lead to enhanced land power capabilities. FY 2018 Plans: Administering S&T database computer engineering support contract and support RDECOM databases S&T management support. FY 2019 Plans: Will administer S&T database computer engineering support contract and support RDECOM databases S&T management support. FY 2018 to FY 2019 Increase/Decrease Statement: Change in requirements and scope of the effort.			
Accomplishments/Planned Programs Subtotals		6.095	5.866
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605803A / Technical Information Activities				Project (Number/Name) 727 / Tech Info Activities			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
727: Tech Info Activities	-	8.346	11.535	9.132	-	9.132	10.287	10.489	10.809	11.023	0.000	71.621
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project funds the development of decision aids, databases, and automation support for the management and execution of the Army RDTE Appropriation. It includes the hardware, software, and contractor support required to develop and implement a set of management decision aids, databases, and hardware/software tools to support technical and budgetary decisions at the Office of the Secretary of Defense (OSD) and Department of the Army (DA). Most of the efforts in this project are on-going activities to support Army Research, Development, and Acquisition programs. Effective exploitation of Science and Technology (S&T) information is critical to achieving the goals established by Senior Army Leadership for the future force. Funding in this program supports Independent Review Team analysis of technology maturity as part of Technology Readiness Assessments as required by Department of Defense Instruction (DoDI) 5000.2.												
The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering science and technology priority focus areas and the Army Modernization Strategy.												
Work in this project is performed by the Office of the Assistant Secretary of the Army, Acquisition, Logistics and Technology, The Pentagon, Washington, DC.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Conduct and support S&T program portfolio assessments and analysis.									1.656	1.770	1.216	
Description: Support identification, development and demonstration of technology options that inform and enable effective and affordable capabilities for the Soldier Providing Soldiers with the technology to win. Support Air, Ground Maneuver and Lethality Portfolio Directors, responding to scientific, technical and programmatic challenges. Support Independent Review Team analysis of technology maturity as part of Technology Readiness Assessments as required by DoDI 5000.2. Serve as Office of the Deputy Assistant Secretary of the Army, Research and Technology (DASA(R&T)) central point of contact for Systems Red Teaming and Technology Vulnerability Assessments.												
FY 2018 Plans:												
Track, manage and provide programmatic support for applied research and advanced technology development efforts in vulnerability assessments; act as the S&T Subject Matter Experts (SMEs) provide Portfolio leads what is forecasted for science and technology ?outputs? to align with Programs of Record (PoR); provide ODASA (R&T) summary briefing in the SPAR, ensure tight alignment and coupling to existing PoRs and identifying where misalignment between Portfolio technology projections/ timelines and/or emerging technology options are not yet reflected at the PoR level. Identify technology for effective and affordable												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605803A / Technical Information Activities	Project (Number/Name) 727 / Tech Info Activities		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
capabilities in the S&T portfolios: Basic Research, Innovation Enablers, Medical, Soldier/Squad, Command, Communications and Command, Control, Communications, Computers and Intelligence (C3I), Air, Lethality and Ground Maneuver.				
FY 2019 Plans: Will track, manage and provide programmatic support for applied research and advanced technology development efforts in vulnerability assessments; act as the S&T SMEs provide Portfolio leads what is forecasted for science and technology ? outputs? to align with Programs of Record; provide ODASA (R&T) summary briefing in the SPAR; ensure tight alignment and coupling to existing PoRs and identifying where misalignment between Portfolio technology projections/timelines and/or emerging technology options are not yet reflected at the PoR level. Identify technology for effective and affordable capabilities in the S&T portfolios: Basic Research, Innovation Enablers, Medical, Soldier/Squad, Command, Communications and Command, Control, Communications, Computers and Intelligence (C3I), Air, Lethality and Ground Maneuver.				
FY 2018 to FY 2019 Increase/Decrease Statement: Compliance and continuity.				
Title: Support Army S&T strategic planning, analysis, and prioritization. Description: Coordinate efforts with and across the Army S&T portfolios; manage proposal nomination and selection process; track and provide oversight of ongoing efforts; recommend resolutions/prioritization in the event of conflicting requirements and/or resource constraints; support the full spectrum of Planning, Programming and Budget Execution (PPBE) as it relates to the Army S&T Program. Provide senior level technical and analytical support for the Joint Capability Technology Demonstration (JCTD) program and Technology Maturation Initiative (TMI) by assisting with investment analysis, strategies and oversight. Provide financial management recommendations and insights with regards to JCTDs, TMI, Manufacturing Technology (ManTech) and DMIs. Provide technical support and database administration of the Army Science and Technology Management Information System (ASTMIS) database. A variety of scientific and technical taxonomies applied at the task level allow responsive reporting on S&T programs to Congressional, OSD and Army leadership.		4.764	6.689	5.587
FY 2018 Plans: Develop strategic analyses to look across the S&T portfolios and provide recommendations to the Director of Integration for S&T efficiencies and collaborative opportunities; support ODASA(R&T) lead for future force; continue to coordinate efforts with and across the Army S&T portfolios; support the Program Decision Memorandum (PDM) process, tasks and guidance for Equipping Program Evaluation Group (PEG); develop prioritized decrement lists and recommend alternatives for a balanced portfolio; and support the plan and execution for the ASTAG, the ASTWG and the WTC.				
FY 2019 Plans: Will develop strategic analyses to look across the S&T portfolios and provide recommendations to the Director of Integration for S&T efficiencies and collaborative opportunities; support ODASA(R&T) lead for future force; continue to coordinate efforts				

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605803A / Technical Information Activities	Project (Number/Name) 727 / Tech Info Activities		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
with and across the Army S&T portfolios; support the PDM process, tasks and guidance for Equipping PEG; develop prioritized decrement lists and recommend alternatives for a balanced portfolio; and support the plan and execution for the ASTAG, the ASTWG and the WTC.				
FY 2018 to FY 2019 Increase/Decrease Statement: Compliance and continuity.				
Title: Provide funding and support for Army Acquisition Program Technology Readiness Assessments for Program Milestone Decisions.		1.199	1.967	1.318
Description: Coordination and alignment with Programs of Record. Demonstrate technical feasibility at system and subsystem level. As path for technology spirals to acquisition, ensure a rapid insertion of new technology.				
FY 2018 Plans: Support the S&T investment strategy for the entire Army; provide options for the future across to sustain overmatch against adversaries and create opportunities to meet new challenges and fight in new ways; continue Independent Review Team (IPT) analysis of technology maturity as part of Technology Readiness Assessments as required by DoDI 5000.2; and act as the central point of contact for Systems Red Teaming and Technology Vulnerability Assessments.				
FY 2019 Plans: Will support the S&T investment strategy for the entire Army; provide options for the future across to sustain overmatch against adversaries and create opportunities to meet new challenges and fight in new ways; continue Independent Review Team (IPT) analysis of technology maturity as part of Technology Readiness Assessments as required by DoDI 5000.2; and act as the central point of contact for Systems Red Teaming and Technology Vulnerability Assessments.				
FY 2018 to FY 2019 Increase/Decrease Statement: Compliance and continuity.				
Title: Provide Army support to Assistant Secretary of Defense for Research and Engineering Executive Staff for Department of Defense (DoD) wide Science and Technology oversight.		0.727	1.109	1.011
Description: Support for Army engagement in DoD/Assistant Secretary of Defense (Research & Engineering) (ASD(R&E)) and cross agency Science Technology Engineering and Mathematics (STEM) and diversity initiatives, including support for historically black colleges and universities/ minority-serving institutions (HBCU/MSI) actions. provide subject matter expert support for educational and diversity outreach activities, to include targeted research, analysis, and studies in support of strategic planning, prioritizing, investment strategy and review criteria for the Army Educational Outreach Program (AEOP).				
FY 2018 Plans:				

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>	Project (Number/Name) 727 / <i>Tech Info Activities</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Participate in Defense Advanced Research Projects Agency (DARPA) engagements and awareness of DARPA Programs with links to Army S&T, and support Army S&T Engagements with DARPA Program Managers and Leadership; and support execution of ongoing programs, events and functional responsibilities, effectively communicating with all Army stakeholders and partners including other services, OSD, industry and academia. FY 2019 Plans: Will participate in Defense Advanced Research Projects Agency (DARPA) engagements and awareness of DARPA Programs with links to Army S&T, and support Army S&T Engagements with DARPA Program Managers and Leadership; and support execution of ongoing programs, events and functional responsibilities, effectively communicating with all Army stakeholders and partners including other services, OSD, industry and academia. FY 2018 to FY 2019 Increase/Decrease Statement: Compliance and continuity.			
Accomplishments/Planned Programs Subtotals		8.346	11.535
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>				Project (Number/Name) 730 / <i>Pers & Trng Analys Act</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
730: <i>Pers & Trng Analys Act</i>	-	1.965	2.232	1.346	-	1.346	2.244	2.291	2.354	2.401	0.000	14.833
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds the Army's behavioral and social science research in attitudes and opinions assessment, longitudinal trends in Soldier and leader perceptions, and emerging issues. The research provides a unique capability to address a number of issues that directly or indirectly affect Soldier and unit performance and readiness, such as identifying the impact of personnel policies on Soldier outcomes and identifying emerging and potential personnel challenges. Requirements for this research is solicited on a recurring basis from the Secretary of the Army (SA), Chief of Staff of the Army (CSA), Army Deputy Chief of Staff (DCS G-1), and the Assistant Secretary of the Army for Manpower and Reserve Affairs (ASA(M&RA)).

Work in this Project is managed by the United States Army Research Institute for the Behavioral and Social Sciences (ARI), Ft. Belvoir, VA.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019
Title: PERS & TRNG ANALYS ACT	1.965	2.232	1.346
Description: This effort conducts attitude and opinion research to identify longitudinal trends and emerging issues to inform senior Army leader decision making and shape ARI's long-range S&T program.			
FY 2018 Plans: Conduct research on critical issues identified by the SA, CSA, DCS G-1, and ASA(M&RA).			
FY 2019 Plans: Will conduct research on critical issues identified by the SA, CSA, DCS G-1, and ASA(M&RA).			
FY 2018 to FY 2019 Increase/Decrease Statement: Change in requirements and scope of effort.			
Accomplishments/Planned Programs Subtotals	1.965	2.232	1.346

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>	Project (Number/Name) 730 / <i>Pers & Trng Analys Act</i>
E. Performance Metrics N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605803A / Technical Information Activities				Project (Number/Name) 731 / Army High Performance Computing Centers			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
731: Army High Performance Computing Centers	-	4.459	4.535	4.595	-	4.595	4.685	4.785	4.906	5.002	0.000	32.967
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides funding for the high performance computing (HPC) research environment, research, education, outreach, and sustainment infrastructure sustainment, and outreach support associated with the Army High Performance Computing Centers at the U.S. Army Research Laboratory (ARL) and the U.S Army Tank and Automotive Research, Development, and Engineering Center (TARDEC). The Army High Performance Computing Centers provide high fidelity modeling, simulation, and analysis of materials, systems, and operational constructs. The Centers work with researchers at Army laboratories and research, development, and engineering centers to explore new HPC computing environments, algorithms in the computational sciences to address critical technology issues in computational research areas.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering science and technology priority focus areas and the Army Modernization Strategy.

Work is performed by ARL, Aberdeen Proving Ground, MD and TARDEC, Warren, MI.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Sustain the High Performance Computing Environment and Infrastructure in Support of the US Army Research Laboratory (ARL)	4.259	4.535	4.595
Description: The HPC center provides levels of computational capacity to Army's tactical operational realms and provide innovative HPC capabilities to increase the effectiveness of Army Soldiers around the world. Algorithm design and software engineering approaches are investigated to effectively partition and use binary processing cores to reduce time to solution for Army-relevant problems. Factors such as performance, portability, and power will be considered in conjunction with developing new models to quantify computing capabilities in hybrid systems to facilitate algorithm signature mapping to available resources.			
FY 2018 Plans: Sustain HPC environment and infrastructure for advanced heterogeneous computing architecture including data sciences computing architectures, special access systems infrastructure, programmable HPC Networking infrastructure, and ARL computational sciences Open Campus systems; and sustain software so that the software can take advantage of advanced			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>	Project (Number/Name) 731 / <i>Army High Performance Computing Centers</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
computing architectures, HPC networking, and visualization that are mission critical for Army S&E and Test & Evaluation (T&E) applications. FY 2019 Plans: Will sustain HPC environment and infrastructure for advanced heterogeneous computing architecture including data sciences computing architectures, special access systems infrastructure, programmable HPC Networking infrastructure, and ARL computational sciences Open Campus systems; and sustain software so that the software can take advantage of advanced computing architectures, HPC networking, and visualization that are mission critical for Army S&E and T&E applications. FY 2018 to FY 2019 Increase/Decrease Statement: Adjustment due to inflation.			
Title: Sustain the High Performance Computing Environment and Infrastructure in Support of the US Army Tank and Automotive Research Development and Engineering Center Description: The HPC center provides levels of computational capacity to Army's tactical operational realms and provide innovative HPC capabilities to increase the effectiveness of Army Soldiers around the world. Tactical HPC will be possible only through a combined effort of advanced computing architectures research, mathematical models and techniques to network and manage deployed friendly computing devices.		0.200	-
Accomplishments/Planned Programs Subtotals		4.459	4.535
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>				Project (Number/Name) <i>733 / Acquisition Tech Act</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
733: <i>Acquisition Tech Act</i>	-	3.500	3.760	3.529	-	3.529	9.278	9.402	9.345	9.470	0.000	48.284
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds improvements to the Army's acquisition process by applying decision support and expert information systems, and by supporting analysis and evaluation of alternative acquisition strategies using techniques such as value-added analysis and analysis-of-alternatives. This Project provides the environment for the analysis and evaluation of new information technologies, concepts, and applications for integrated management activities and support dynamic Army acquisition technology requirements. This Project also supports critical analyses for Army leadership in support of Army Transformation. These analyses are used by leadership in making acquisition, procurement, and logistics decisions in order to provide quality equipment and procedures to the Soldiers.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy.

Work in this Project is performed by the Army Acquisition Support Center, Ft. Belvoir, VA.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: ACQUISITION TECH ACT	3.500	3.760	3.529
Description: Distribute and beta test application programs and user interface utilities for executive level information systems that offer Standard Query Language services to Army Acquisition Corps corporate and global databases. Analyze acquisition program financial programming and budgeting requirements. Continue development of Weapon Systems Handbook, long-range planning and policy analysis, resource allocation analysis, cost tracking, and analysis.			
FY 2018 Plans: Distribute and beta test application programs and user interface utilities for executive level information systems that offer Standard Query Language services to Army Acquisition Corps corporate and global databases; analyze acquisition program financial programming and budgeting requirements; and continue development of long-range planning and policy analysis, resource allocation analysis, cost tracking, and analysis.			
FY 2019 Plans: Will distribute and beta test application programs and user interface utilities for executive level information systems that offer Standard Query Language services to Army Acquisition Corps corporate and global databases; analyze acquisition program			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>	Project (Number/Name) 733 / <i>Acquisition Tech Act</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
financial programming and budgeting requirements; and continue development of long-range planning and policy analysis, resource allocation analysis, cost tracking, and analysis.			
FY 2018 to FY 2019 Increase/Decrease Statement: Change in requirements and scope of effort.			
Accomplishments/Planned Programs Subtotals		3.500	3.760
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>				Project (Number/Name) C16 / <i>FAST</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
C16: <i>FAST</i>	-	1.535	1.644	1.630	-	1.630	1.654	1.691	1.740	1.773	0.000	11.667
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides support for the Field Assistance in Science and Technology (FAST) program. The FAST program provides Science Advisors, recruited from Army Materiel Command (AMC) headquarters and all AMC Major Subordinate Commands (MSC) to serve combatant commands and major commands worldwide. FAST tours of duty provide significant professional growth opportunities for the Army's scientists and engineers and enable them to focus AMC resources on rapidly identifying and solving field technical problems that enable the improvement of readiness, safety, training, and reduce operations and support (O&S) costs. The FAST activity is supported by Quick Reaction Coordinators within the engineering centers. The FAST program recoups many times its cost in O&S savings. FAST also provides emerging technology demonstration opportunities to the engineering centers an Annual Program Review to facilitate sharing of lessons learned between science advisors at combatant commands, assists Combatant Commanders (COCOMS) with their annual Science and Technology Conferences. FAST also maintains close coordination with the Navy Science Advisor Program (Naval Fleet Forces Technology Integration Office). FAST supports warfighters in contingency operations with embedded Science and Technology Assistance Teams (STATs) as well as Science and Technology Acquisition Corps Advisors (STACAs).

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy.

Work in this project is performed by: AMC, Redstone Arsenal, AL; and Research, Development and Engineering Command (RDECOM), Aberdeen Proving Ground, MD.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Respond to combatant commanders worldwide with technological solutions.	1.535	1.644	1.630
Description: This activity: responds to combatant commanders worldwide with technological solutions to urgent materiel problems they identify; deploys science advisors with U.S. Task Forces in support of combatant commanders; executes annual Program Review; provides additional support needed to participate in combatant commander exercises; responds to corresponding Warfighter requests for information (RFIs), providing project support to offset capability gaps identified by the Warfighter.			
FY 2018 Plans: Respond to combatant commanders worldwide with technological solutions to urgent materiel problems they identify; deploy science advisors with U.S. Task Forces in support of combatant commanders; execute annual Program Review; provide			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>	Project (Number/Name) C16 / FAST	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
additional support needed to participate in combatant commander exercises; respond to corresponding Warfighter RFI's will provide project support to offset capability gaps identified by the Warfighter. FY 2019 Plans: Will respond to combatant commanders worldwide with technological solutions to urgent materiel problems they identify; deploy science advisors with U.S. Task Forces in support of combatant commanders; execute annual Program Review; provide additional support needed to participate in combatant commander exercises; respond to corresponding Warfighter RFI's will provide project support to offset capability gaps identified by the Warfighter. FY 2018 to FY 2019 Increase/Decrease Statement: Change in requirements and scope of effort.			
Accomplishments/Planned Programs Subtotals		1.535	1.644
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605803A / Technical Information Activities				Project (Number/Name) C18 / BAST			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
C18: BAST	-	0.959	1.061	0.895	-	0.895	1.076	1.096	1.129	1.151	0.000	7.367
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project funds the Board on Army Science and Technology (BAST). The BAST functions under the auspices of the National Research Council (NRC) and provides an external, independent, and objective source of advice to the Army. The BAST serves as a convening authority for the discussion of science and technology issues of importance to the Army and oversees independent Army-related studies conducted by the National Academies. Working in close coordination with the Army, the BAST helps define problems, brings together experts to study these problems, and provides recommendations. Committees are assembled in accordance with established NRC procedures and BAST studies often take 12 months or more to conclude. The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering science and technology priority focus areas and the Army Modernization Strategy. Work in this Project is executed extramurally by the U.S. Army Research Laboratory, Army Research Office (ARO), Research Triangle Park, NC.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Provide Studies and Conduct Periodic Meetings to Help Identify, Assess, and Recommend Emerging Opportunities in Science and Technology (S&T) Fields Applicable to the United States (U.S.) Army. Description: To acquire a greater understanding of emerging technology opportunities that support a plethora of Army-relevant capability gaps, technologies are continuously assessed both nationally and internationally. In addition, periodic meetings are conducted to discuss and recommend strategic research areas critical to advancing the Warfighter's capabilities. FY 2018 Plans: Study emerging topics based on Army S&T strategy and senior leader initiatives. Plan to initiate a new National Academies study. FY 2019 Plans: Will study emerging topics based on Army S&T strategy and senior leader initiatives and plan to initiate a new National Academies study. FY 2018 to FY 2019 Increase/Decrease Statement: Change in requirements and scope of effort.									0.959	1.061	0.895	
Accomplishments/Planned Programs Subtotals									0.959	1.061	0.895	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>	Project (Number/Name) C18 / <i>BAST</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605803A / Technical Information Activities				Project (Number/Name) DW3 / Army Geospatial Enterprise Implementation			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
DW3: Army Geospatial Enterprise Implementation	-	3.046	3.301	3.143	-	3.143	3.259	3.330	3.411	3.456	0.000	22.946
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project: provides geospatial domain expertise to Mission Command (MC) in implementing the Army Geospatial Enterprise (AGE) across all MC Systems to ensure interoperability across the Army; ensures Army systems can consume geospatial data from National-Geospatial Intelligence Agency (NGA) and with National System for Geospatial-Intelligence (NSG) partners as required by Department of Defense Instruction (DoDI) 5000.56; standardizes geospatial data between echelons and ensures Standard, Sharable Geospatial Foundation (a Mission Command Essential Capability) across Mission Command; and sustains core mission of operations. Project also provides an interoperable geospatial baseline system of systems in theater, which is a near-term requirement that cannot be deferred. Geospatial is a Mission Command Essential Capability and a critical enabler for the Common Operating Environment (COE) and the warfighter.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Geospatial Acquisition Support Office	3.046	3.301	3.143
Description: This effort supports the systems engineering, architecture, and test and certification of Army Acquisition Systems to support Program Executive Office (PEO)/Program Manager (PM) Computing Environment (CE) geospatial requirements to ensure that system's acquisition processes address geospatial concepts, technology and standards early in their development processes and provide an interoperable geospatial baseline system of systems in theater, which is a near-term requirement that cannot be deferred.			
FY 2018 Plans: Extend the AGE implementation within the Command Post Computing Environment, Mounted and Mobile Hand-Held CE's; develop alternatives for providing Standard, Sharable Geospatial Foundation (a Mission Command Essential Capability) to Mission Command Systems in a disconnected, Intermittent or Limited environment; develop and recommend standards to distribute SSGF from National to Tactical; develop "to be" AGE roadmap for Mission Command ensuring interoperability between Mission Command systems, the NSG, and our Joint, Inter-Agency, Inter-Governmental and Multi-National (JIIM) partners; and provide geospatial domain expertise for Cross-Cutting Capabilities for the Common Operating Environment.			
FY 2019 Plans: Will extend the AGE implementation within the Command Post Computing Environment, Mounted and Mobile Hand-Held CE's; develop alternatives for providing Standard, Sharable Geospatial Foundation (a Mission Command Essential Capability) to Mission Command Systems in a disconnected, Intermittent or Limited environment; develop and recommend standards to distribute SSGF from National to Tactical; develop "to be" AGE roadmap for Mission Command ensuring interoperability			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605803A / <i>Technical Information Activities</i>	Project (Number/Name) DW3 / <i>Army Geospatial Enterprise Implementation</i>		
B. Accomplishments/Planned Programs (\$ in Millions) between Mission Command systems, the NSG, and our JIIM partners; and provide geospatial domain expertise for Cross-Cutting Capabilities for the Common Operating Environment. <i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> Change in requirements and scope of effort.		FY 2017	FY 2018	FY 2019
Accomplishments/Planned Programs Subtotals		3.046	3.301	3.143
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army **Date:** February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605805A / <i>Munitions Standardization, Effectiveness and Safety</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	63.983	43.444	42.332	-	42.332	44.269	41.862	43.273	43.575	0.000	322.738
297: <i>Mun Survivability & Log</i>	-	14.566	16.650	16.658	-	16.658	15.479	16.235	16.924	16.661	0.000	113.173
857: <i>DoD Explosives Safety Standards</i>	-	1.544	1.968	1.842	-	1.842	1.858	1.892	1.930	1.964	0.000	12.998
858: <i>Army Explosives Safety Management Program</i>	-	0.609	1.085	0.992	-	0.992	1.011	1.030	1.047	1.065	0.000	6.839
859: <i>Life Cycle Pilot Process</i>	-	29.676	5.568	5.441	-	5.441	5.536	5.634	5.732	5.829	0.000	63.416
F21: <i>NATO Ammo Evaluation</i>	-	0.625	0.589	0.742	-	0.742	0.741	0.741	0.741	0.741	0.000	4.920
F24: <i>Conventional Munitions Demil</i>	-	16.963	17.584	16.657	-	16.657	19.644	16.330	16.899	17.315	0.000	121.392

A. Mission Description and Budget Item Justification

This Program Element (PE) supports continuing technology investigations. It provides a coordinated tri-Service mechanism for the collection and free exchange of technical data on the performance and effectiveness of all non-nuclear conventional munitions and weapons systems in a realistic operational environment.

Project 297 - Munitions Survivability & Logistics: This Project supports the future force by making Army units more survivable through the investigation, testing and demonstration of munitions logistics system improvements that prevent or minimize catastrophic explosive events and accelerate ammunition resupply. Key thrusts are munitions storage area survivability, Insensitive Munitions (IM) technology integration and compliance, ammunition management and asset visibility, weapon system rearm, munitions configured load enablers and advanced packaging and distribution system enhancements. Within each thrust, a broad array of solutions will be identified, tested, and evaluated against developed system measures of effectiveness. Optimum, cost effective and efficient solutions that enable the rapid projection of lethal and survivable forces will be demonstrated. The early stages of force deployment are especially critical. Theater ammunition storage areas are vulnerable and present the enemy with lucrative targets. These areas and distribution nodes contain the only available munitions stocks in theater. Loss of these munition stocks could cripple the force, jeopardize the mission, and result in high loss of life. This Project mitigates vulnerabilities and ensures a survivable fighting force.

Project 857 - DoD Explosives Safety Standards: This Project supports the Research, Development, Test, and Evaluation efforts of the Department of Defense (DoD) Explosive Safety Standards Board. It supports explosive safety effects research and testing to quantify hazards and to develop techniques to mitigate those hazards in all DoD manufacturing, testing, transportation, maintenance, storage, disposal of ammunition and explosives operations, and also to develop risk based explosives safety standards. Results are essential to the development and improvement of quantity-distance standards, hazard classification procedures, cost effective explosion-resistant facility design procedures, and personnel hazard/protection criteria.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605805A / <i>Munitions Standardization, Effectiveness and Safety</i>
Project 858 - Army Explosives Safety Management Program: This Project establishes, validates or modifies explosives technical safety requirements per Department of Defense Manual 6055.09 and Department of the Army Pamphlet 385-64, Ammunition and Explosives Safety Standards. Project activities promote Research, Development, Test, and Evaluation (RDTE) of new and innovative explosives safety technologies that improve the survivability of Army personnel, facilities, and equipment as well as improve the health, safety and welfare of the general public (with highest priority directed to combat theater of operations). Project 859 - Life Cycle Pilot Process: This Project supports the implementation of the Single Manager for Conventional Ammunition (SMCA) Industrial Base Strategic Plan through technology investigations, model based process controls, pilot prototyping, and industrial assessments. It will assess life cycle production capabilities required for all ammunition families, address design for manufacturability to facilitate economical production, identify industrial and technology requirements, and address the ability of the production base to rapidly and cost effectively produce quality products. Cost reduction is an important part of the Life Cycle Pilot Process (LCPP). LCPP provides the resources to prototype critical technologies and develop the knowledge base to establish cost effective, environmentally safe and modern production processes in support of the munitions Industrial Base transformation. In addition, the LCPP program addresses Single Point Failures (SPFs) / No Source of supply within the National Technology Industrial Base (NTIB). LCPP provides support to reduce supply chain risk by investigating, developing and evaluating additional sources of supply for a known SPF. Project F21: The North Atlantic Treaty Organization (NATO) Ammunition Evaluation program funding assures interchangeability of direct fire ammunition and weapons among all the NATO countries with all of the associated logistic, strategic and tactical advantages of the alliance. The Project involves development and testing compliance of NATO standardization agreements (STANAGS) and staffing of the North American Regional Test Center (NARTC). In addition, this Project supports small caliber ammunition, 40mm grenade munitions, medium caliber cannon ammunition and large caliber ammunition enhancements to lethality, effectiveness, survivability, accuracy and general product improvements. This Project also supports the standardization and interchangeability of legacy and new production United States (U.S.) weapons and ammunition with Allied Nations to maximize battlefield interchangeability/compatibility under the auspices of the international Joint Ballistics Memorandum Of Understanding (JBMOU). Maximizing standardization, interchangeability, and exportability will also potentially increase Foreign Military Sales (FMS) of U.S. indirect fire Weapon and Munition products to maintain critical mass domestic production and affordable taxpayer costs through increased economies of scale. Fiscal Year (FY) 2019 funding supports NATO small arms ammunition interchangeability group meetings, documentation, and test operations. FY 2019 funding also supports JBMOU ballistic testing including firing tables, safety, reliability, and performance. F24 - Conventional Munitions Demilitarization (Demil): The Conventional Munitions Demilitarization technology Project supports the Single Manager for Conventional Ammunition (SMCA) responsibility per Department of Defense Instruction (DoDI) 5160.68 to plan, program, budget and fund a Joint Service Research and Development (R&D) program that develops capability and capacity as well as technology and facilities to support the SMCA mission to demil and dispose of conventional ammunition stored in the SMCA Resource, Recovery and Disposition Account (B5A). The program goals include SMCA efforts to increase efficiencies and effectiveness to reduce the demil stockpile; reduce processing costs including packaging, handling and crating; and increase capacity through improved demilitarization capabilities and processes. Project F24 includes activities: (1) to establish requirements and develop processes to focus investments, assess capabilities, analyze alternatives, and recommend and implement R&D projects; (2) to improve products and processes that support existing capabilities; (3) to develop or improve demil methods and processes related to advance the primary demilitarization core thrust areas of destruction, disassembly, removal, resource recovery and recycling, and waste stream treatment; (4) to ensure safe and environmentally acceptable demil operations; (5) to transition R&D products to United States Army depots or plants as well as commercial facilities performing demil; and (6) to mitigate risk and close-out project activities.		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	40.545	43.444	41.589	-	41.589
Current President's Budget	63.983	43.444	42.332	-	42.332
Total Adjustments	23.438	0.000	0.743	-	0.743
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	25.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.543	-			
• Adjustments to Budget Years	-	-	0.743	-	0.743
• FFRDC Transfer	-0.019	-	-	-	-
Congressional Add Details (\$ in Millions, and Includes General Reductions)					
Project: 859: Life Cycle Pilot Process					
Congressional Add: Fiscal Year (FY) 2017 Congressional Add					
Congressional Add Subtotals for Project: 859					
Congressional Add Totals for all Projects					
Change Summary Explanation					
\$25 Million Congressional Add in Fiscal Year 2017 applied to Project 858, Life Cycle Pilot Process.					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety				Project (Number/Name) 297 / Mun Survivability & Log			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
297: Mun Survivability & Log	-	14.566	16.650	16.658	-	16.658	15.479	16.235	16.924	16.661	0.000	113.173
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project supports the future force by making Army units more survivable through the investigation, testing and demonstration of munitions logistics system improvements that prevent or minimize catastrophic explosive events and accelerate ammunition resupply. Key thrusts are munitions storage area survivability, Insensitive Munitions (IM) technology integration and compliance, ammunition management and asset visibility, weapon system rearm, munitions configured load enablers and advanced packaging and distribution system enhancements. Within each thrust, a broad array of solutions will be identified, tested, and evaluated against developed system measures of effectiveness. Optimum, cost effective and efficient solutions that enable the rapid projection of lethal and survivable forces will be demonstrated. The early stages of force deployment are especially critical. Theater ammunition storage areas are vulnerable and present the enemy with lucrative targets. These areas and distribution nodes contain the only available munitions stocks in theater. Loss of these munition stocks could cripple the force, jeopardize the mission, and result in high loss of life. This Project mitigates vulnerabilities and ensures a survivable fighting force.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Munitions Predictive Life									1.916	1.718	1.766	
Description: This activity will demonstrate technologies and algorithms that can help assess munitions serviceability based upon aggregate environmental exposures, system cycling and munition degradation models. The activity will provide life cycle management tools for risk mitigation strategies, while reducing testing, inspection & surveillance required as well as improving weapon system reliability and warfighter effectiveness.												
FY 2018 Plans: Conduct qualification safety testing of a next generation ammunition container based temperature/humidity exposure reliability sensor and complete data integration into Munitions History Program (MHP) and Stockpile reliability program Quality Assurance Specialist Ammunition Surveillance User Inspection Device. Conduct prototype engineering testing of a Multi Frequency Sensor Suite that will monitor munitions exposure to ambient radiation over their lifecycle for improved reliability knowledge. Conduct correlation testing on the passive time/temperature exposure sensor with legacy ammunition items and integrate. Conduct market survey of passive Radio Frequency Identification and low cost active environmental sensors for legacy munitions, select viable candidates, and test. Integrate passive propellant temperature sensor with fire control systems and processes.												
FY 2019 Plans: Conduct qualification safety testing of an integrated second generation prototype next generation ammunition container based temperature/humidity exposure reliability sensor. Conduct qualification testing of a Multi Frequency Sensor Suite that will monitor munitions exposure to ambient radiation over their lifecycle for improved reliability knowledge. Conduct correlation testing on												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety	Project (Number/Name) 297 / Mun Survivability & Log		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
the passive time/temperature exposure sensor with legacy ammunition items and integrate. Conduct market survey of passive Radio Frequency Identification and low cost active environmental sensors for legacy munitions, select viable candidates, and test. Integrate passive propellant temperature sensor with fire control systems and processes. Incorporate automation friendly health monitors into automation supply point - scalable and continue integration testing.				
FY 2018 to FY 2019 Increase/Decrease Statement: Funding explained by revised economic assumptions.				
Title: Insensitive Munitions (IM) Integration Program		5.497	6.288	6.570
Description: Demonstrate multiple IM technologies and integrate into end item(s) to improve munitions survivability and warfighter safety. IM Technologies, using State-of-the-Art materials, will be developed in the areas of warhead, propulsion and propellants, explosives, packaging, and barriers. In addition, modeling and simulation will be used to reduce development and testing costs. Efforts will increase the number of IM compliant ammunition items fielded to mitigate munitions reaction to unplanned stimuli such as fire, fragments, enclosed heat build-up (cook-off), bullets, adjacent munitions reaction (sympathetic detonation), and shape charge jet attacks.				
FY 2018 Plans: Conduct final integration testing of all 30mm M788/M789 IM technologies and transition to Project Manager Maneuver Ammunition Systems (PM-MAS). Validate reduced-sensitivity and high performance explosives in small and medium caliber munitions systems. Optimize the use of nano-energetic materials as reduced-sensitivity but high-output main fill explosives or boosters in small and medium caliber munition systems. Validate the use of high-energy output and reduced-sensitivity 3,4-dinitropyrazole (DNP) explosive in hand grenades and optimize booster configuration to accommodate enhanced fuze. Optimize the use of new packaging and dunnage materials that actively attract or pull heat away from vulnerable munition components in case of fire.				
FY 2019 Plans: Transition improvements from High Shear Mix project to qualified propellant materials to produce high-performing propellants with better fragment impact (FI) responses. Validate novel propellant technologies in medium and large caliber munitions to reduce hazards from FI threat. Demonstrate novel packaging heat management materials in mortars systems to delay catastrophic responses in Slow Cook Off (SCO) conditions. Validate packaging configurations that eliminate mass detonation events in tightly-packed medium caliber munitions. Optimize granulated melt-pour energetics to reduce mass-detonation hazards of tightly-packed medium caliber munitions while maintaining high-energy output.				
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 funding level is higher than FY 2018 due to anticipated increase in labor, test, and prototype costs.				
Title: Improved Munitions Packaging		2.718	3.575	2.804

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety	Project (Number/Name) 297 / Mun Survivability & Log		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Description: This activity will demonstrate upgrades to existing packaging components and materials to improve legacy ammunition survivability. These upgrades will enhance ammunition survivability and reliability, improve field ammunition operations, and improve packaging. FY 2018 Plans: Develop prototypes and conduct sequential rough handling and environmental testing for the injection molded cylindrical container that integrates it for use with the M829A4 120mm tank and 120mm mortar munitions. Develop prototypes and conduct sequential rough handling and environmental testing for the plastic rectangular container to integrate it for use with legacy 5.56 small caliber ammunition. Develop several concepts geared to ?lighten the load? and down select concepts thru modeling and simulation and analysis. Complete qualification testing of plastic sealed ammunition pouches for use with 5.56mm ammunition. Perform final hazard classification testing on M6 and M7 blasting cap container design with Mycofoam. Fully implement Mycofoam as replacement dunnage design option for M6 and M7 blasting cap packaging design as part of the eco-friendly program. Conduct engineering and prototype testing of a small caliber ammunition bulk packaging container for improved distribution efficiency. FY 2019 Plans: Conduct verification testing on injection molded cylindrical container that integrates it for use with the M829A4 120mm tank and 120mm mortar munitions. Conduct verification testing for the plastic rectangular container to integrate it for use with legacy 5.56mm small caliber ammunition. Produce prototypes geared to ?lighten the load? and perform in-house engineering tests to validate. Perform final hazard classification testing on M6 and M7 blasting cap container design with Mycofoam. Conduct verification testing of a small caliber ammunition bulk packaging container for improved distribution efficiency. Facilitate implementation of new bulk container at LCAAP and identify other potential small caliber ammunition bulk container candidates. Conduct developmental testing of the initial plastic mortar container prototype for use with all families of mortars. Perform rough handling, drop testing, and other developmental testing on the rapid access container consolidator. FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 funding level is lower than FY 2018 because multiple projects are transitioning to Budget Activity 4.				
Title: Ammo Provider Description: This activity demonstrates technologies that will assure a survivable munitions logistics system by increasing distribution velocity and protecting ammo storage areas. Technology areas to be investigated include ammunition asset visibility (including environmental sensors, marking technologies, and supply chain modeling), ammunition management (including improvements in stockpile surveillance and condition based management), sustainment (including pre-configured loads (soldier to unit size), field ammo reconfiguration capability, robotic handling, and improved load building capability), and force protection (including site planning software and field storage protection).		4.435	5.069	5.518

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety		Project (Number/Name) 297 / Mun Survivability & Log	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
FY 2018 Plans: Conduct phase 1 demonstration of the enhanced speedbag with the Tactical Resupply Unmanned Aerial System ? Competitive (TRUC). Complete the design of a graphical user interface for the Ammunition Quality Decision Tool and conduct user evaluation of tool effectiveness. Complete Joint Modular Intermodal Container (JMIC)/container Analysis of Alternatives and transition alternative prototype. Implement software requirements for operating Expeditionary Munitions Survivability Software (EMSS) in a disconnected state. Add basic site surveying capability with a mobile hardware device. Expand Configured Load Building Tool (CLBT) prototype capabilities to determine and visualize loads at the sub-pallet level on set of defined standard transportation conveyances. Mature 5K forklift and Rough Terrain Container Handler (RTCH) automation kit prototypes to include integration of maintenance and troubleshooting aids and conduct validation testing. Integrate applique interface kit for manually operated Material Handling Equipment (MHE) into the 5K forklift and RTCH, implement software control subsystems, and perform subsystem testing. Conduct engineering and user testing of the automated pallet scanning and weighing system. Develop software links to Automated Supply Point-Scalable (ASP-S) for data transmission. Complete design for an integrated round counting sensor device that enables automatic capturing of fired ammunition data from weapon systems to facilitate anticipatory resupply. Complete requirements analysis and update design architecture of the Class V Adaptive Demand Estimation System (CADES) that will permit intelligent, anticipatory ammunition management on the battlefield with the ability to monitor consumption and supply node stock levels for forward warfighting units. Modify as necessary and conduct demonstration of the CADES prototype to provide theater level stockage objective to meet anticipated demand. Support continued use of the Distribution & Retrograde APEX Management (DRAM) prototype in operational demonstrations. Complete the design of a multi-modal supply pallet that minimizes the requirement for handling and reconfiguration of cargo in transit. FY 2019 Plans: Demonstrate multiple enablers including Ammunition Quality Decision Tool, Configured Load Building Tool, MHE applique interface kit and CADES as parts of an integrated ammunition scenario within ASP-S. Develop the design concept and down select sensor and scanning hardware for an automated truck scanning capability to enable conveyance level transfer of accountability and autonomous inspections of transported cargo in the ASP-S. Develop the design concept and down select platform, sensor and scanning hardware for a yard mule transport capability to enable local autonomous lift capability during the consolidation and put-away processes within the ASP-S. Perform engineering evaluation of an integrated round counting sensor device that enables automatic capturing of fired ammunition data from weapon systems to facilitate anticipatory resupply. Support continued use of DRAM and the Class V Adaptive Demand Estimation System (CADES) prototypes in operational demonstrations. Perform validation and verification testing for an integrated round counting sensor device that enables automatic capturing of fired ammunition data from weapon systems to facilitate anticipatory resupply. Develop artificial intelligence concepts					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / <i>Munitions Standardization, Effectiveness and Safety</i>	Project (Number/Name) 297 / <i>Mun Survivability & Log</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
and apply to ammunition handling activities such as turn in and retrograde operations. Conduct operational assessment of expeditionary MSS enhancements.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 funding level is higher than FY 2018 due to anticipated increase in labor, test, and prototype costs.			
Accomplishments/Planned Programs Subtotals		14.566	16.650
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety				Project (Number/Name) 857 / DoD Explosives Safety Standards			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
857: DoD Explosives Safety Standards	-	1.544	1.968	1.842	-	1.842	1.858	1.892	1.930	1.964	0.000	12.998
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project supports the Research, Development, Test, and Evaluation (RDTE) efforts of the Department of Defense (DoD) Explosive Safety Standards Board. It supports explosive safety effects research and testing to quantify hazards and to develop techniques to mitigate those hazards in all DoD manufacturing, testing, transportation, maintenance, storage, disposal of ammunition and explosives operations, and also to develop risk based explosives safety standards. Results are essential to the development and improvement of quantity-distance standards, hazard classification procedures, cost effective explosion-resistant facility design procedures, and personnel hazard/protection criteria.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Explosive and Munitions Tests	0.500	0.574	0.534
Description: Testing aimed at solving practical problems and increasing predictability of the effects of explosions and impacts on people, materials and structures. Additionally, testing provides data on the interaction of explosives in various configurations. Testing results are used to improve predictability of effects from explosive incidents and improve criteria to protect people, structures and the environment from the damaging effects of DoD munitions. FY 2018 Plans: Continue testing of laboratory quantities, potential partnering effort for testing of underwater shock effects, further maturation of HD 1.3 testing and scaled testing of earth-covered magazines to determine blast pressures at intermagazine distance. Laboratory quantity testing: Explosives safety criteria are generally geared towards larger quantities of explosives where the specifics of the donor structure have less of an effect on the hazards generated. This is particularly problematic for lab quantities of explosives (e.g., 500 grams and lower), where the specifics of the construction type, room geometry, standoff, etc., can have a profound effect on the associated hazards. Current criteria is admittedly conservative in this regime, but testing and analysis are needed to justify reduced safety standoff distances. This work will leverage previous ATF lab quantities testing by increasing the explosive weight until breach of a sheetrock wall; determine the secondary breach debris hazards from a nominal laboratory room design; and assess overpressurization failure hazards of a nominal laboratory room design. This will result in reduced safety standoff distances for the conditions tested.			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety	Project (Number/Name) 857 / DoD Explosives Safety Standards		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Hazard Division 1.3 testing: As a result of a study of historical accidents approximately 75% of accidents are initiated by fire versus by detonation via an initiation chain. Also, the Insensitive Munitions Program has as a primary goal to develop more ? insensitive? munitions and their end state is systems that react by burn only. These two conditions combine to make the potential for a non-detonation reaction more likely in the event of an explosives accident. This testing effort is designed to address the gaps in knowledge of HD 1.3/thermal hazards from a non-detonation reaction by performing testing to characterize the debris hazards from breakup of a confining structure, characterize the directional jetting effects from such structures, and assess the thermal hazard of burning in the open. FY 2019 Plans: Continue testing of laboratory quantities, potential partnering effort for testing of underwater shock effects, further maturation of HD 1.3 testing and scaled testing of earth-covered magazines to determine blast pressures at intermagazine distance. FY 2018 to FY 2019 Increase/Decrease Statement: Economic assumptions revised.				
Title: Safety Guidelines Description: The DDESB is charged with developing DoD explosives safety standards. These standards are captured in several DoD issuances, but the primary one is DoDM 6055.09, DoD Ammunition and Explosives Safety Standards. Changes to DoDM 6055.09 must be approved by the DoD Explosives Safety Board. The Board Members have identified their priorities for update of DoDM 6055.09, and these priorities are reflected in the formation of DDESB working groups and test programs to develop new and revised explosives safety standards. This effort continually improves safety policy and guidance. FY 2018 Plans: Continuation of work on hazard classification criteria. Initial development of major rewrite of DoD explosives safety standards, to include addressing revised Hazard Division 1.2 criteria in both NATO and DoD policy. Development of example design procedures for design of blast-resistant windows and glazing. Near complete rewrite of DoD explosives safety standards. Continue effort on harmonization with NATO and UN policy resulting in seamless NATO and multi-national operations. Initial phase of work to develop more refined secondary debris hazards from explosives storage buildings. FY 2019 Plans: Will continue effort on harmonization with NATO and UN policy resulting in seamless NATO and multi-national operations. Initial phase of work to develop more refined secondary debris hazards from explosives storage buildings. FY 2018 to FY 2019 Increase/Decrease Statement:		0.450	0.545	0.459

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / <i>Munitions Standardization, Effectiveness and Safety</i>	Project (Number/Name) 857 / <i>DoD Explosives Safety Standards</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Economic assumptions revised.			
Title: Analysis Tools Description: Develop tools & models required to calculate, estimate and predict explosives safety hazards, associated standoff distances, fragmentation distribution, personnel risks and other parameters. Additionally tools are required to develop and maintain explosives safety site plans. FY 2018 Plans: Leverage master planning partnerships to develop initial web-based site planning capability. Develop a tool to predict fragment distances from piping partially contaminated with explosives residue model which will utilize the pipe size (diameter and thickness), the length of pipe, and the maximum credible event to account for only a percentage of the total available volume in the pipe being filled to better predict fragmentation hazards in building remediation. Develop a model to predict coupled effects of over-pressurization of a structure from a thermal event and the mass distribution of the resulting debris. Development of modeling to predict burn characterization of propellants FY 2019 Plans: Develop tools & models required to calculate, estimate and predict explosives safety hazards, associated standoff distances, fragmentation distribution, personnel risks and other parameters. Additionally tools are required to develop and maintain explosives safety site plans.		0.594	0.849
Accomplishments/Planned Programs Subtotals		1.544	1.968
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety				Project (Number/Name) 858 / Army Explosives Safety Management Program			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
858: Army Explosives Safety Management Program	-	0.609	1.085	0.992	-	0.992	1.011	1.030	1.047	1.065	0.000	6.839
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project establishes, validates or modifies explosives technical safety requirements per Department of Defense Pamphlet 385-64, Ammunition and Explosives Safety Standards. Project activities promote RDTE of new and innovative explosives safety technologies that improve the survivability of Army personnel, facilities, and equipment as well as improve the health, safety and welfare of the general public.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Risk based explosives safety criteria Description: Development of risk based explosives safety criteria that will aid commanders and safety personnel in the transition from regulation to risk management. FY 2018 Plans: Continue explosives testing and support of hazard research and exposure consequences. FY 2019 Plans: Will continue explosives testing and support of hazard research and exposure consequences. FY 2018 to FY 2019 Increase/Decrease Statement: Economic assumptions adjusted.	0.150	0.150	0.200
Title: Development of enhanced protective structure designs Description: Develop enhanced protective structure designs that improve the survivability of Army personnel, facilities and equipment. FY 2018 Plans: Continue explosives testing and support for improving protective construction designs. FY 2019 Plans: Will continue explosives testing and support for improving protective construction designs. FY 2018 to FY 2019 Increase/Decrease Statement:	0.236	0.425	0.500

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / <i>Munitions Standardization, Effectiveness and Safety</i>	Project (Number/Name) 858 / <i>Army Explosives Safety Management Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Economic assumptions adjusted.			
Title: Development of explosive safety tools Description: Develop explosive safety tools for use by Army personnel. Explosive safety tools allow commanders and safety personnel to make explosive safety decisions using risk management methodologies. FY 2018 Plans: Continue development of new methods and tools for risk assessment to improve explosive safety risk management decisions. FY 2019 Plans: Will continue development of new methods and tools for risk assessment to improve explosive safety risk management decisions. FY 2018 to FY 2019 Increase/Decrease Statement: Reversion to previous funding profile.		0.223	0.510
Accomplishments/Planned Programs Subtotals		0.609	1.085
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety				Project (Number/Name) 859 / Life Cycle Pilot Process			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
859: Life Cycle Pilot Process	-	29.676	5.568	5.441	-	5.441	5.536	5.634	5.732	5.829	0.000	63.416
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project supports the implementation of the Single Manager for Conventional Ammunition (SMCA) Industrial Base Strategic Plan through technology investigations, model based process controls, pilot prototyping, and industrial assessments. It will assess life cycle production capabilities required for all ammunition families, address design for manufacturability to facilitate economical production, identify industrial and technology requirements, and address the ability of the production base to rapidly and cost effectively produce quality products. Cost reduction is an important part of the Life Cycle Pilot Process (LCPP). LCPP provides the resources to prototype critical technologies and develop the knowledge base to establish cost effective, environmentally safe and modern production processes in support of the munitions Industrial Base transformation. In addition, the LCPP program addresses Single Point Failures (SPFs)/No Source of supply within the National Technology Industrial Base (NTIB). LCPP provides support to reduce supply chain risk by investigating, developing and evaluating additional sources of supply for a known SPF.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Product Cost Thrust Area									1.409	1.086	1.261	
Description: This thrust area seeks out new opportunities to reduce overall manufacturing costs of ammunition and ammunition components. Efforts will review and analyze legacy manufacturing processing for opportunities to integrate new technology and lean manufacturing processes to reduce cost.												
FY 2018 Plans: Complete evaluation of the mortar fin inspection process. Continue to evaluate, assess and transition new technology for legacy processes to reduce overall production costs for the Army.												
FY 2019 Plans: Continue to evaluate new processes and technology to reduce overall production and end item costs for the Army. Continue and transition insensitive munitions explosives (IMX) riser reclamation prototype process to NTIB. Complete mortar illuminant canister material evaluation.												
FY 2018 to FY 2019 Increase/Decrease Statement: Economic assumptions revised.												
Title: Single Point Failures									1.062	1.903	1.925	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety	Project (Number/Name) 859 / Life Cycle Pilot Process		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Description: This thrust area will assess alternative sources and processes to mitigate SPFs. These efforts are part of the overall strategy to reduce the number of SPFs in the NTIB. Additionally, thrust area efforts will address ammunition manufacturing capability shortfalls. This area leverages RDTE accomplishments and product knowledge to satisfy manufacturing requirements. FY 2018 Plans: Continue to evaluate fuze battery material alternatives and complete evaluation of tank ammunition primer sealant alternatives. Efforts will address source of supply problems within the NTIB. Efforts will address source of supply problems within the NTIB. Technology transitions and risk mitigation strategies are transferred to PMs/PDs for their use in assessing procurement strategies for affected SPF end items. FY 2019 Plans: Complete liquid battery reserve SPF for artillery fuzes and transition to PM or PD for their use in risk mitigation implementation supply strategies and assessing procurement strategies for affected end items. Complete SPF densified basic magnesium carbonate (DBMC) assessment. Complete tank primer sealant evaluation. FY 2018 to FY 2019 Increase/Decrease Statement: Economic assumptions revised.				
Title: Manufacturing Technology for Industrial Base Transformation Description: Project thrust area evaluates mature processes and manufacturing technologies that provides enhanced capabilities to legacy manufacturing operations. Efforts will pilot process technologies from government research and development centers and private industry for utilization in ammunition related manufacturing processes. FY 2018 Plans: Complete MIC/green primer pilot scale manufacturing and prototype manufacturing of pre-cursor materials for foamed celluloid sheets. Continue investigations, develop and document manufacturing technology for transition to the NTIB. Technology transitions to affected Industrial Base via the Industrial Facilities modernization program. FY 2019 Plans: Continue investigations, develop and document technology for transfer to NTIB. Complete manufacture celluloid sheets for foamed celluloid applications. Continue Green Primer Pilot Process. Complete ammonium nitrate solution (ANSOL) technology evaluation to affected IB. FY 2018 to FY 2019 Increase/Decrease Statement: Reversion to previous funding profile.		2.205	2.579	2.255
Accomplishments/Planned Programs Subtotals		4.676	5.568	5.441

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / <i>Munitions Standardization, Effectiveness and Safety</i>	Project (Number/Name) 859 / <i>Life Cycle Pilot Process</i>	
		FY 2017	FY 2018
Congressional Add: Fiscal Year (FY) 2017 Congressional Add FY 2017 Accomplishments: N/A		25.000	-
Congressional Adds Subtotals		25.000	-
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety				Project (Number/Name) F21 / NATO Ammo Evaluation			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
F21: NATO Ammo Evaluation	-	0.625	0.589	0.742	-	0.742	0.741	0.741	0.741	0.741	0.000	4.920
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The North Atlantic Treaty Organization (NATO) Ammunition Evaluation program funding ensures interchangeability of direct fire ammunition and weapons among all the NATO countries with all of the associated logistic, strategic and tactical advantages of the alliance. The Project involves development and testing compliance of NATO standardization agreements (STANAGS) and staffing of the North American Regional Test Center (NARTC). In addition, this Project supports small caliber ammunition, 40mm grenade munitions, medium caliber cannon ammunition, and large caliber ammunition enhancements to lethality, effectiveness, survivability, accuracy, and general product improvements. This Project also supports the standardization and interchangeability of legacy and new production U.S. weapons and ammunition with Allied Nations to maximize battlefield interchangeability/compatibility under the auspices of the international Joint Ballistics Memorandum Of Understanding (JBMOU). Maximizing standardization, interchangeability, and exportability will also potentially increase Foreign Military Sales (FMS) of U.S. indirect fire Weapon and Munition products to maintain critical mass domestic production and affordable taxpayer costs through increased economies of scale. Fiscal Year (FY) 2019 funding supports NATO small arms ammunition interchangeability group meetings, documentation and test operations. FY 2019 funding also supports JBMOU ballistic testing including firing tables, safety, reliability, and performance.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: New Ammo Design Qualification & NATO Mission Support									0.217	0.139	0.292	
Description: This activity ensures complete interchangeability of small caliber, automated cannon-caliber, 40mm grenade ammunition, air burst capable 30mm/40mm ammunition, and weapons among NATO countries to achieve the associated logistic, strategic and tactical advantages.												
FY 2018 Plans: FY 2018: work to support NATO small arms ammunition interchangeability group meetings, documentation and test operations.												
FY 2019 Plans: FY 2019 will continue work to support NATO small arms ammunition interchangeability group meetings, documentation and test operations.												
FY 2018 to FY 2019 Increase/Decrease Statement: Increased for activities planned in FY 2019.												
Title: Joint Ballistics Program Support									0.408	0.450	0.450	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / <i>Munitions Standardization, Effectiveness and Safety</i>	Project (Number/Name) F21 / <i>NATO Ammo Evaluation</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Description: The activity supports the maturation, validation, and risk reduction of battlefield interchangeability/compatibility and associated enabling technologies between domestic U.S. and NATO/Allied Nations Indirect Fires Weapons and Munitions. FY 2018 Plans: FY 2018 activities include ballistic testing including firing tables, safety, reliability, and performance. FY 2019 Plans: FY 2019 continues ballistic testing including firing tables, safety, reliability, and performance.			
Accomplishments/Planned Programs Subtotals		0.625	0.589
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety				Project (Number/Name) F24 / Conventional Munitions Demil			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
F24: Conventional Munitions Demil	-	16.963	17.584	16.657	-	16.657	19.644	16.330	16.899	17.315	0.000	121.392
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Conventional Munitions Demilitarization technology Project supports the Single Manager for Conventional Ammunition (SMCA) responsibility per Department of Defense Instruction (DoDI) 5160.68 to plan, program, budget and fund a Joint Service R&D program that develops capability and capacity as well as technology and facilities to support the SMCA mission to demil and dispose of conventional ammunition stored in the SMCA Resource, Recovery and Disposition Account (B5A). The Project goals include SMCA efforts to increase efficiencies and effectiveness to reduce the demil stockpile; reduce processing costs including packaging, handling and crating; and increase capacity through improved demil capabilities and processes. Project F24 includes several activities: (1) to establish requirements and develop processes to focus investments, assess capabilities, analyze alternatives, and recommend and implement R&D projects; (2) to improve products and processes that support existing capabilities; (3) to develop or improve demil methods and processes related to advance the primary demilitarization core thrust areas of destruction, disassembly, removal, resource recovery and recycling, and waste stream treatment; (4) to ensure safe and environmentally acceptable demil operations; (5) to transition R&D products to United States Army depots or plants as well as commercial facilities performing demil; and (6) to mitigate risk and close-out Project activities.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Advanced Destruction	7.287	7.209	4.401
Description: This effort focuses on developing capabilities and capacities for the destruction of munitions.			
FY 2018 Plans: Conduct the final transition of Letterkenny Munitions Center (LEMC) Ammonium Perchlorate Rocket Motor Destruction (ARMD) resulting in Initial Operational Capability (IOC). Complete the Final Design for the Multiple Rocket Motor (MRM) Upgrade to the LEMC ARMD. Initiate Equipment Installation on the Multiple Rocket Motor (MRM) to the LEMC ARMD. Will conduct the Operational Demonstration for the MCDF. Complete the MCDF transition to IOC. Complete fabrication and begin install of Rockeye download equipment at CAAA. Conduct an operational demonstration of the Rockeye Download Equipment. Complete Phase I operational testing of the Engine Starter Cartridge at MCAAP and initiate design of Phase II Engine Starter Cartridge equipment.			
FY 2019 Plans: Will verify functionality of LEMC ARMD under FOC conditions. Will complete MCDF FOC Transition. Conduct an operational demonstration of the Rockeye Download Equipment at CAAA. Complete Operational Demonstration of Rockeye download			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / <i>Munitions Standardization, Effectiveness and Safety</i>	Project (Number/Name) F24 / <i>Conventional Munitions Demil</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
equipment. Complete testing on ARMD Multi Motor and Build fixturing to install at ARMD. Conduct safety and assessment effort on the obsolete Talos Missile. Conduct Analysis of Alternatives and Talos Demil process.				
FY 2018 to FY 2019 Increase/Decrease Statement: Completed final transition of ARMD to LEMC.				
Title: Resource Recovery and Recycling (R3) Description: This effort focuses on enhancing existing methods of munitions R3. FY 2018 Plans: Conduct the factory acceptance testing for washout equipment for 16-inch Navy Gun projectiles. FY 2019 Plans: Will conduct testing to determine cleanliness of ammunition scrap on the Automated Scrap Inspection System at an organic depot location. FY 2018 to FY 2019 Increase/Decrease Statement: Economic assumptions revised.		0.940	1.620	1.800
Title: Advanced Removal Description: This effort develops technology to remove propellant and energetics from munitions. FY 2018 Plans: Initiate design modifications and build fixturing for the RP Demil line at CAAA. Develop a Design for a capability to demil infrared (IR) munitions at CAAA. Transition the Copperhead Munitions Closed Disposal process at MCAAP. FY 2019 Plans: Will conduct operational testing on IR Munitions Demil line at CAAA. Conduct Operational Testing of the 2.75-inch Rocket Demil Line at CAAA. Will initiate design modifications and build fixturing to the red phosphorus (RP) demil line at CAAA to add RP Mortar Demil capability. FY 2018 to FY 2019 Increase/Decrease Statement: Initiating design modifications.		1.875	2.175	3.005
Title: Advanced Waste Stream Treatment Description: This effort focuses on handling waste streams from munitions items. FY 2018 Plans:		2.850	3.976	2.500

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / <i>Munitions Standardization, Effectiveness and Safety</i>	Project (Number/Name) F24 / <i>Conventional Munitions Demil</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Assemble major components and conduct operational demonstration of the upgraded feed system on a rotary kiln incinerator at an organic location. Conduct testing on CS Gas munitions to verify analytical estimates to thermally treat CS gas and provide a final report. FY 2019 Plans: Will initiate the building of the upgraded feed system on a rotary kiln incinerator at an organic location. Will conduct an Analysis of Alternatives for a Bulk Energetics Confined Burn Capability located at Hawthorne Army Depot (HWAD). FY 2018 to FY 2019 Increase/Decrease Statement: Slightly reduced cost of fulfilling requirement for Fiscal Year 2019.			
Title: Advanced Munitions Disassembly Description: This effort focuses on developing innovative and efficient processes to disassemble munitions. FY 2018 Plans: Complete the Design for a capability to Cryofracture Rockeye Munitions with thermal processing in the rotary kiln at CAAA. Initiate equipment installation for a Rockeye Demil Capability at CAAA. Planned transition of production demil process for Liquid Rocket-62 (LR-62) Bullpup motors at ANMC. Install equipment to conduct Reactive Armor Tile Thermal Treatment and disposal. Conduct an Operational Demonstration of size reduction of reactive armor tiles to facilitate thermal treatment/disposal. Transition an Initial Capability for Size Reduction of Reactive Armor Tiles. Develop a Design for D561/D562 155mm ICM Project Demil. Fabricate and Install equipment for D561/D562 ICM Demil at a Depot location. Develop a design for disassembly of MK46 Torpedoes at HWAD. FY 2019 Plans: Will initiate systemization of Family of Scatterable Mines (FASCAM) demil project to integrate the preprocessing Cryofracture capability of FASCAM mines with thermal processing in the rotary kiln at Crane Army Ammunition Activity (CAAA). Conduct operational demonstration of MK46 Torpedo Warhead segmenting capability at HWAD. Complete testing of capability developed to size reduce Reactive Armor Tiles. Complete testing on Thermal Treatment of Reactive Armor Tiles. FY 2018 to FY 2019 Increase/Decrease Statement: Initiating Family of Scattered Mines demilitarization project.		4.011	2.604
Accomplishments/Planned Programs Subtotals		16.963	17.584
C. Other Program Funding Summary (\$ in Millions) N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / Munitions Standardization, Effectiveness and Safety	Project (Number/Name) F24 / Conventional Munitions Demil
C. Other Program Funding Summary (\$ in Millions)		
Remarks		
D. Acquisition Strategy		
N/A		
E. Performance Metrics		
N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605857A / Environmental Quality Technology Mgmt Support							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	2.048	5.087	3.216	-	3.216	4.876	2.988	3.045	3.130	0.000	24.390
031: Environmentally Sustainable Acquisition/Logistics	-	1.943	4.377	2.293	-	2.293	4.314	2.383	2.431	2.479	0.000	20.220
06I: POLLUTION PREVENTION TECH SUPPORT	-	0.105	0.710	0.923	-	0.923	0.562	0.605	0.614	0.651	0.000	4.170

A. Mission Description and Budget Item Justification

This Program Element (PE) resources environmental quality technology (EQT)-related management support functions including support of research, development, test and evaluation required for EQT technical integration efforts at demonstration/validation test sites, technical information and activities, test facilities and general test instrumentation, and EQT requirement assessments. Funds required to support the management of technology transfer associated with technology demonstrated and validated as part of Army EQT projects are included in this PE. In addition, support to the Army weapon system acquisition community to address environmental quality requirements are included under the Environmentally Sustainable Acquisition/Logistics Program.

The Environmentally Sustainable Acquisition/Logistics Project includes program management for developing acquisition strategies that both achieve system key performance parameters and sustain the environment without permanent and unacceptable change in the natural environment or human health from system concept refinement through disposal. It includes systematic consideration of environmental impacts, energy use, natural resources, installation impacts, economics, and quality of life. It provides support to the system acquisition community, e.g., program and project managers, to integrate environmental quality analyses into the system acquisition process. The goal is to resolve environmental quality issues related to weapon systems that are identified during design, development, testing, operation, or support to reduce Army environmental liabilities and total ownership costs and includes efforts to eliminate the use of hazardous and ozone-depleting materials from weapon systems and facilities and to ensure the availability of Halon 1301 to support weapon system fire suppression requirements.

The Pollution Prevention Tech Support Project funds the management support costs to execute the Toxic Metals Reduction, Airborne Lead Reduction, and Low Global Warming Potential (LGWP) environmental quality technology programs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0605857A / Environmental Quality Technology Mgmt Support			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	2.130	5.087	3.480	-	3.480
Current President's Budget	2.048	5.087	3.216	-	3.216
Total Adjustments	-0.082	0.000	-0.264	-	-0.264
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.081	-			
• Adjustments to Budget Years	-	-	-0.264	-	-0.264
• FFRDC Transfer	-0.001	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605857A / Environmental Quality Technology Mgmt Support				Project (Number/Name) 031 / Environmentally Sustainable Acquisition/Logistics			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
031: Environmentally Sustainable Acquisition/Logistics	-	1.943	4.377	2.293	-	2.293	4.314	2.383	2.431	2.479	0.000	20.220
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Environmentally Sustainable Acquisition/Logistics (ESAL) Project provides support to the system acquisition community to integrate environmental quality issues and concerns into the life cycle system acquisition process. To a much lesser extent, safety, occupational health and energy efficiency are also addressed. The focus of ESAL is on improving readiness, improving acquisition processes, reducing supportability burden, and minimizing total ownership cost. The Assistant Secretary of the Army for Installations, Energy and Environment has defined the functions of the ESAL project in coordination with the Army Acquisition Executive and the Assistant Secretary of the Army (Acquisition, Logistics, and Technology). This Project provides direct support to the Army acquisition community to pursue environmental sustainability and comply with legal statutes, policies and regulations during the life cycle of Army materiel. ESAL helps the Army achieve compliance with its weapon systems, industrial base, field and deployed activities directed by international treaties, Federal statutes, Executive Orders, Department of Defense (DoD) and Army policies and regulations.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Environmental Quality (EQ) Support	0.926	1.095	1.076
Description: Provide EQ Support to Acquisition Programs.			
FY 2018 Plans: Provide support to Program Executive Offices (PEOs) / Program Managers (PMs) to integrate EQ considerations into systems engineering activities. This includes fulfillment of National Environmental Policy Act requirements, definition of EQ technology needs to meet operational requirements, analysis of technical data to support implementation decisions, participation in technical and cost risk assessment activities, and assessment and revision of contractual and operational requirements for successful technology integration, operation and support. Analyze impending legal statutes impacting production, operation and support of weapon systems. Assess weapon system readiness impacts (e.g., production levels, training, operational tempo and maintenance activities) resulting from EQ issues affecting industrial base and garrisons. Provide Army acquisition community representation in select Office of the Secretary of Defense (OSD) and Department of the Army (DA) committees addressing environmental legislation and rulemaking.			
FY 2019 Plans: Will provide support to PEOs/PMs to integrate EQ considerations into systems engineering activities. This will include fulfillment of National Environmental Policy Act requirements, definition of EQ technology needs to meet operational requirements, analysis of technical data to support implementation decisions, participation in technical and cost risk assessment activities, and assessment			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0605857A / <i>Environmental Quality Technology Mgmt Support</i>		Project (Number/Name) 031 / <i>Environmentally Sustainable Acquisition/Logistics</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
and revision of contractual and operational requirements for successful technology integration, operation and support. Will analyze impending legal statutes impacting production, operation and support of weapon systems. Will assess weapon system readiness impacts (e.g., production levels, training, operational tempo and maintenance activities) resulting from EQ issues affecting industrial base and garrisons. Will provide Army acquisition community representation in select OSD and DA committees addressing environmental legislation and rulemaking. FY 2018 to FY 2019 Increase/Decrease Statement: Decrease to FY19 in accordance with senior leader priorities.					
Title: Environmental Quality Technology Management Description: Provide management support for Army EQ technology efforts. FY 2018 Plans: Provide system acquisition support to the Army's EQ technology program and coordination of EQ-related systems' needs for expanded Research and Development, Test and Evaluation (RDTE) efforts. Manage and oversee technology integration efforts by Army Life Cycle Management Commands for weapon systems in all stages of design, procurement and operations/support. Coordinate RDTE requirements among members of the Army EQ Technology Teams, will coordinate technology evaluations and operational requirements in support of weapon system platform integration, manage and oversee test plan development, oversee testing activities, and analyze test results to support weapon systems engineering decision making. FY 2019 Plans: Will provide system acquisition support to the Army's EQ technology program and coordination of EQ-related systems' needs for expanded RDTE efforts. Will manage and oversee technology integration efforts by Army Life Cycle Management Commands for weapon systems in all stages of design, procurement and operations/support. Will coordinate RDTE requirements among members of the Army EQ Technology Teams, will coordinate technology evaluations and operational requirements in support of weapon system platform integration, will manage and oversee test plan development, will oversee testing activities, and will analyze test results to support weapon systems engineering decision making. FY 2018 to FY 2019 Increase/Decrease Statement: FY19 shifted resources within this PE/Project to better align with complementary Operations and Maintenance, Army (OMA) program.			0.634	0.749	1.217
Title: Ozone Depleting Substance Management Description: Oversee Army efforts to manage the use/elimination of ozone depleting substances on Army weapon systems. FY 2018 Plans:			0.383	0.453	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605857A / <i>Environmental Quality Technology Mgmt Support</i>	Project (Number/Name) 031 / <i>Environmentally Sustainable Acquisition/Logistics</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Oversee Army efforts to manage the use/elimination of ozone-depleting substances on Army weapon systems. Monitor the Army's reserve of ozone-depleting substances that contains the Army's strategic supplies of Halon used for explosion and fire suppression systems and R-22 used in fielded environmental control units. Coordinate with PEOs/PMs to affect system replacement and retrofit to eliminate ozone depleting substances while minimizing greenhouse gases and to obtain approval to require use of Halon in new contracts.			
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease to FY19 in accordance with senior leader priorities.			
Title: Headquarters Army Environmental System (HQAES) Description: Headquarters Army Environmental System support.		-	2.080
FY 2018 Plans: Support HQAES modifications recommended by Configuration Control Management Board in order to support network security worthiness.			
FY 2018 to FY 2019 Increase/Decrease Statement: FY19 decrease reflects a funding cycle of every other year for this effort.			
Accomplishments/Planned Programs Subtotals		1.943	2.293
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605857A / Environmental Quality Technology Mgmt Support				Project (Number/Name) 06I / POLLUTION PREVENTION TECH SUPPORT			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
06I: POLLUTION PREVENTION TECH SUPPORT	-	0.105	0.710	0.923	-	0.923	0.562	0.605	0.614	0.651	0.000	4.170
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides RDTE Management Support for the demonstration and validation of weapon system pollution prevention technologies within the Army's Environmental Quality Technology program. The Project increases operational sustainment and warfighter training capabilities by reducing soldier and worker health risks and environmental impacts that would otherwise result in restoration needs and compliance enforcement actions against installations while simultaneously increasing performance and standardization across the Army. This Project provides for management of RDTE activities conducted under project 0603779A, Environmental Quality Technology Dem/Val (E21). The Project expedites technology transition from the laboratory to operational use by establishing toxicology assessments to support the demonstration of new materials and processes fulfilling the performance requirements outlined in Material Specifications, Depot Maintenance Work Requirements, Technical Manuals, Drawings and other technical data.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Management of Army Environmental Quality Technology Programs Description: Manage and oversee the demonstration/validation of weapon system pollution prevention technologies within the Army's Environmental Quality Technology Program. FY 2018 Plans: Manage and oversee the demonstration/validation of two pollution prevention technology efforts: Toxic Metal Reduction in Surface Finishing of Army Weapon Systems, and Airborne Lead Reduction from Army Weapon Systems. FY 2019 Plans: Will manage and oversee the demonstration/validation of three pollution prevention technology efforts: Toxic Metal Reduction in Surface Finishing of Army Weapon Systems, Airborne Lead Reduction from Army Weapon Systems, and Low Global Warming Potential Alternatives to Ozone Depleting Substances. FY 2018 to FY 2019 Increase/Decrease Statement: FY2018 includes toxicity assessments that will not be repeated in FY19.	0.105	0.710	0.435
Title: Environmental, Safety and Occupational Health Impacts of Short-Term Noise Assessment Procedures Description: Manage and oversee the demonstration and validation of technologies for making Army blast noise short-term noise assessment.	-	-	0.253

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605857A / <i>Environmental Quality Technology Mgmt Support</i>	Project (Number/Name) 061 / <i>POLLUTION PREVENTION TECH SUPPORT</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
<i>FY 2019 Plans:</i> Will develop training modules for using short-term noise assessment tools. These self-guided on-line training modules will be for use by installation range managers and address the use of short-term noise assessment procedures and interpretation of results to minimize risk to training and maximize training throughput.			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> FY19 initiates funding for this task.			
<i>Title:</i> Advanced Water Reuse Technology for Fixed Installations <i>Description:</i> Advanced water reuse technologies demonstration and guidance for Army fixed installations applications.		-	-
<i>FY 2019 Plans:</i> Will generate a report that summarizes the results of the demonstration study and recommends updates to guidance documents from Army Public Health Center and Unified Facilities Criteria.			
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> FY19 initiates funding for this task.			
Accomplishments/Planned Programs Subtotals		0.105	0.710
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army **Date:** February 2018

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605898A / Management Headquarters (Rsch and Dev)							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	49.287	54.679	54.145	-	54.145	54.951	55.961	56.809	46.603	0.000	372.435
FJ2: Army SHARP RDTE	-	0.000	0.000	1.583	-	1.583	1.582	1.581	1.581	1.581	0.000	7.908
M65: Army Test and Evaluation Command	-	49.287	50.802	48.624	-	48.624	49.379	50.304	51.067	40.778	0.000	340.241
XW7: Command HQ - ARI	-	0.000	3.877	3.938	-	3.938	3.990	4.076	4.161	4.244	0.000	24.286

Note

Project FJ2 is a New Start for Fiscal Year 2019.

A. Mission Description and Budget Item Justification

This Program Element (PE) provides funding for the salaries and related personnel benefits for the authorized civilian personnel positions that provide for the management functions and the technical direction of the United States (U.S.) Army Test and Evaluation Command (ATEC) mission located at Aberdeen Proving Ground (APG), Maryland. ATEC plans, conducts and integrates developmental testing, independent operational testing, independent evaluations, and assessments to provide essential information to Soldiers and acquisition decision makers supporting the American Warfighter.

This Program Element provides the non-Army Management Headquarters Activity (non-AMHA) management and administrative support that enables the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) to accomplish its research mission and includes personnel/manpower execution and oversight. ARI's behavioral and social science research provides effective non-materiel solutions to help the Army adjust to changes in force size and structure, a variety of mission demands and contexts, challenges in human relations, and budgetary constraints. ARI is the only Science and Technology (S&T) laboratory that conducts research to enhance the Soldier lifecycle (e.g., selection, assignment, training, leader development) and human relations (e.g., culture of dignity, respect, and inclusion). In addition, this Program Element includes staff/management functions of resource management, human resources, safety, security, environmental, strategic planning and information/technology support for command-wide databases in support of the developmental, evaluation and operational test mission with technical direction to the Army Evaluation Center (AEC), Aberdeen Proving Ground, Maryland; to the Operational Test Command (OTC), Fort Hood, Texas which consists of three forward Test Directorates (Airborne and Special Operations Test Directorate, Fort Bragg, North Carolina; Air Defense Artillery Test Directorate, Fort Bliss, Texas; and the Fires Test Directorate, Fort Sill, Oklahoma) together with four other Test Directorates (Aviation; Maneuver; Mission Command; Maneuver Support and Sustainment) at Ft Hood, Texas; and to the seven Major Range and Test Facility Base (MRTFBs) and one non-MRTFB test range: Aberdeen Test Center (ATC) at APG, Maryland; West Desert Test Center (WDTC) at Dugway Proving Ground (DPG), Utah; Electronic Proving Ground (EPG) at Fort Huachuca, Arizona; White Sands Test Center (WSTC) at White Sands Missile Range (WSMR), New Mexico; Yuma Test Center (YTC) at Yuma Proving Ground (YPG), Arizona; Cold Regions Test Center (CRTC) at Fort Greely, Alaska; and Tropic Regions Test Center (TRTC) at various locations, as well as for Redstone Test Center (RTC) at Redstone Arsenal, Alabama. This is the operating budget for ATEC Headquarters, which provides technical direction for the annual execution of ~ 2,700 developmental tests; approximately ~60 operational events; and more than ~840 Evaluation and Safety documents supporting acquisition programs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605898A / <i>Management Headquarters (Rsch and Dev)</i>

This PE does not finance test facility operations, test instrumentation or test equipment.

B. Program Change Summary (\$ in Millions)	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	49.885	54.679	54.197	-	54.197
Current President's Budget	49.287	54.679	54.145	-	54.145
Total Adjustments	-0.598	0.000	-0.052	-	-0.052
• Congressional General Reductions	-0.008	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.590	-			
• Adjustments to Budget Years	-	-	-0.052	-	-0.052

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605898A / Management Headquarters (Rsch and Dev)				Project (Number/Name) FJ2 / Army SHARP RDTE			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FJ2: Army SHARP RDTE	-	0.000	0.000	1.583	-	1.583	1.582	1.581	1.581	1.581	0.000	7.908
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project FJ2 is a New Start for Fiscal Year 2019.

A. Mission Description and Budget Item Justification

This Project will conduct studies of sexual harassment and sexual assault response and prevention in support of National Defense Authorization Act (NDAA) requirements (FY12 S585; FY14 S1725c, FY14 S1733, FY16 S538) and the Chief of Staff of the Army's Readiness priorities related to caring for Soldiers and their families. Conducting studies to meet these requirements is a necessary step to ensure that training, prevention and outreach activities are having the desired effect and impact on the Total Force. Studies will focus on professionalizing the Sexual Harassment / Assault Response and Prevention (SHARP) workforce (i.e., identifying the critical capabilities needed for positions of trust), building climates for dignity and respect, updating prevention and outreach materials and resources (e.g., training), developing effective and adaptive outreach resources, developing efforts to improve Department of Defense (DoD) prevention and response for male Service members, and assessing the efficacy of SHARP programs and tools.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: SHARP RDTE Studies	-	-	1.583
Description: Studies will focus on professionalizing the SHARP workforce (i.e., identifying the critical capabilities needed for positions of trust), building climates for dignity and respect, updating prevention and outreach materials and resources (e.g., training), developing effective and adaptive outreach resources, developing efforts to improve DoD prevention and response for male Service members, and assessing the efficacy of SHARP programs and tools.			
FY 2019 Plans: This requirement funds contracts that cover critical research needs of the Army SHARP Office and the greater Army with a specific focus on prevention. Funding covers costs involved with conducting job analyses for SHARP positions, the creation of competency models for positions of trust, hiring subject matter experts to inform prevention research efforts (e.g., Consortium Research Fellows Program), assessing the efficacy of training/prevention/outreach efforts related to the sexual assault of male service members, providing research-based recommendations to installations executing prevention programs, and working with universities and industry to conduct research and present findings with SHARP stakeholders, Service partners, and the broader Army and DoD.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605898A / Management Headquarters (Rsch and Dev)	Project (Number/Name) FJ2 / Army SHARP RDTE	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Project FJ2 is a new Start for Fiscal Year 2019			
Accomplishments/Planned Programs Subtotals		-	1.583
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605898A / Management Headquarters (Rsch and Dev)				Project (Number/Name) M65 / Army Test and Evaluation Command			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
M65: Army Test and Evaluation Command	-	49.287	50.802	48.624	-	48.624	49.379	50.304	51.067	40.778	0.000	340.241
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides funding for the salaries and related personnel benefits for the authorized civilian personnel positions that provide for the management functions and the technical direction of the United States (U.S.) Army Test and Evaluation Command (ATEC) mission located at Aberdeen Proving Ground (APG), Maryland. ATEC plans, conducts and integrates developmental testing, independent operational testing, independent evaluations, and assessments to provide essential information to Soldiers and acquisition decision makers supporting the American Warfighter.

This Project includes staff/management functions of resource management, human resources, safety, security, environmental, strategic planning and information/technology support for command-wide databases in support of the developmental, evaluation and operational test mission with technical direction to the Army Evaluation Center (AEC), Aberdeen Proving Ground, Maryland; to the Operational Test Command (OTC), Fort Hood, Texas which consists of three forward Test Directorates (Airborne and Special Operations Test Directorate, Fort Bragg, North Carolina; Air Defense Artillery Test Directorate, Fort Bliss, Texas; and the Fires Test Directorate, Fort Sill, Oklahoma) together with four other Test Directorates (Aviation; Maneuver; Mission Command; Maneuver Support and Sustainment) at Ft Hood, Texas; and to the seven Major Range and Test Facility Base (MRTFBs) and one non-MRTFB test range: Aberdeen Test Center (ATC) at APG, Maryland; West Desert Test Center (WDTC) at Dugway Proving Ground (DPG), Utah; Electronic Proving Ground (EPG) at Fort Huachuca, Arizona; White Sands Test Center (WSTC) at White Sands Missile Range (WSMR), New Mexico; Yuma Test Center (YTC) at Yuma Proving Ground (YPG), Arizona; Cold Regions Test Center (CRTC) at Fort Greely, Alaska; and Tropic Regions Test Center (TRTC) at various locations, as well as for Redstone Test Center (RTC) at Redstone Arsenal, Alabama. This is the operating budget for ATEC Headquarters, which provides technical direction for the annual execution of ~ 2,700 developmental tests; approximately ~60 operational events; and more than ~840 Evaluation and Safety documents supporting acquisition programs.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Army Test and Evaluation Command	49.287	50.802	48.624
Description: Civilian labor and other support required to manage and administer the Army test and evaluation mission at ATEC. ATEC plans, conducts and integrates developmental testing, independent operational testing, independent evaluations, assessments and experiments to provide essential information to Soldiers and acquisition decision makers supporting the American Warfighter.			
FY 2018 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605898A / <i>Management Headquarters (Rsch and Dev)</i>	Project (Number/Name) M65 / <i>Army Test and Evaluation Command</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Funds authorized civilian salaries, associated expenses (supplies, equipment, travel, etc.) and other support required to manage and administer the Army test and evaluation mission at ATEC.				
FY 2019 Plans: Will fund authorized civilian salaries, associated expenses (supplies, equipment, travel, etc.) and other support required to manage and administer the Army test and evaluation mission at ATEC.				
FY 2018 to FY 2019 Increase/Decrease Statement: Continuity of effort.				
Accomplishments/Planned Programs Subtotals		49.287	50.802	48.624
C. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
D. Acquisition Strategy N/A				
E. Performance Metrics N/A				

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605898A / Management Headquarters (Rsch and Dev)				Project (Number/Name) XW7 / Command HQ - ARI			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
XW7: Command HQ - ARI	-	0.000	3.877	3.938	-	3.938	3.990	4.076	4.161	4.244	0.000	24.286
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is the only Science and Technology (S&T) laboratory that conducts research to enhance the Soldier lifecycle (e.g., selection, assignment, training, leader development) and human relations (e.g., culture of dignity, respect, and inclusion). This Project supports the non-Army Management Headquarters Activity (non-AMHA) management and administrative functions to enable ARI to accomplish its research mission and includes activities such as budget execution, procurement oversight, RDT&E program planning and evaluation, management control, security/safety, logistics, information technology, and personnel/manpower execution and oversight. ARI's behavioral and social science research provides effective non-materiel solutions to help the Army adjust to changes in force size and structure, a variety of mission demands and contexts, challenges in human relations, and budgetary constraints.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Civilian Pay Description: This effort will provide personnel for management, administrative, personnel, budget, and support functions at a level consistent with Army and mission requirements to meet the needs of ARI as an Army Laboratory conducting the Army's personnel, training, leader development, and organizational performance Research and Development (R&D) program. FY 2018 Plans: Provides personnel for management, administrative, personnel, budget, and support functions at a level consistent with Army and mission requirements to meet the needs of ARI as an Army Laboratory conducting the Army's personnel, training, leader development, and organizational performance R&D program. FY 2019 Plans: Will provide personnel for management, administrative, personnel, budget, and support functions at a level consistent with Army and mission requirements to meet the needs of ARI as an Army Laboratory conducting the Army's personnel, training, leader development, and organizational performance R&D program. FY 2018 to FY 2019 Increase/Decrease Statement: Investment supports S&T strategy and senior leader priorities									-	3.877	3.938	
Accomplishments/Planned Programs Subtotals									-	3.877	3.938	
C. Other Program Funding Summary (\$ in Millions) N/A												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605898A / Management Headquarters (Rsch and Dev)	Project (Number/Name) XW7 / Command HQ - ARI
C. Other Program Funding Summary (\$ in Millions)		
Remarks		
D. Acquisition Strategy		
N/A		
E. Performance Metrics		
N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army **Date:** February 2018

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0606001A / Military Ground-Based CREW Technology							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	7.916	4.896	-	4.896	4.891	4.889	4.941	5.039	0.000	32.572
FD4: Military Ground-Based CREW Technology	-	0.000	7.916	4.896	-	4.896	4.891	4.889	4.941	5.039	0.000	32.572

A. Mission Description and Budget Item Justification

The Secretary of the Army was designated the Department of Defense (DoD) Executive Agent for Military Ground-Based Counter Radio-Controlled Improvised Explosive Device (RCIED) Electronic Warfare (CREW) Technology on 1 December 2013, pursuant to DoD Directive 5101.14 "Military Ground-Based Military CREW Technology". The Program Executive Office for Intelligence, Electronic Warfare & Sensors (PEO IEW&S) is assigned the responsibility to fulfill the duties of the DoD Military Ground-Based CREW Technology Single Manager. The DoD Single Manager (SM) is responsible for ensuring joint operational interoperability and compatibility between relevant DoD and coalition systems; interfaces with all DoD Services and other government agencies involved in CREW Technologies; and collaborates with multiple foreign countries on the RCIED threat, CREW technologies to ensure synergy between the technologies. The DoD Single Manager chairs the Joint Program Board and represents the DoD at the Force Protection Electronic Countermeasures (ECM) Working Group, Five Eyes (FVEYS) and Chairs the North Atlantic Treaty Organization (NATO) Team of Experts (ToE) on ECM for CREW.

Fiscal Year (FY) 2019 Base dollars in the amount of \$4.896 million will support the execution of DoD SM responsibilities. Funding will be used to continue efforts supporting cellular test infrastructure.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	7.916	4.949	-	4.949
Current President's Budget	0.000	7.916	4.896	-	4.896
Total Adjustments	0.000	0.000	-0.053	-	-0.053
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-0.053	-	-0.053

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0606001A / Military Ground-Based CREW Technology				Project (Number/Name) FD4 / Military Ground-Based CREW Technology			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FD4: Military Ground-Based CREW Technology	-	0.000	7.916	4.896	-	4.896	4.891	4.889	4.941	5.039	0.000	32.572
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Secretary of the Army was designated the Department of Defense (DoD) Executive Agent for Military Ground-Based Counter Radio-Controlled Improvised Explosive Device (RCIED) Electronic Warfare (CREW) Technology 1 December 2013, pursuant to DoD Directive 5101.14 "Military Ground-Based Military CREW Technology". The Program Executive Office for Intelligence, Electronic Warfare & Sensors (PEO IEW&S) is assigned the responsibility to fulfill the duties of the DoD Military Ground-Based CREW Technology Single Manager. The DoD Single Manager (SM) is responsible for ensuring joint operational interoperability and compatibility between relevant DoD and coalition systems; interfaces with all DoD Services and other government agencies involved in CREW Technologies; and collaborates with multiple foreign countries on the RCIED threat, CREW technologies to ensure synergy between the technologies. The DoD Single Manager chairs the Joint Program Board and represents the DoD at the Force Protection Electronic Countermeasures (ECM) Working Group, Five Eyes (FVEYS) and Chairs the North Atlantic Treaty Organization (NATO) Team of Experts (ToE) on ECM for CREW.

FY2019 Base dollars in the amount of \$4.896 million will support the execution of DoD SM responsibilities. Funding will be used to continue efforts supporting cellular test infrastructure.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Test Technologies	-	7.916	4.896
FY 2018 Plans: Funding is being used to provide cellular test infrastructure.			
FY 2019 Plans: Funding will be used to provide continued support to cellular test infrastructure.			
FY 2018 to FY 2019 Increase/Decrease Statement: Less funding provides less cellular test infrastructure support.			
Accomplishments/Planned Programs Subtotals	-	7.916	4.896

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0606001A / Military Ground-Based CREW Technology	Project (Number/Name) FD4 / Military Ground-Based CREW Technology
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0606002A / Ronald Reagan Ballistic Missile Defense Test Site							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	61.254	63.011	-	63.011	62.752	64.105	59.961	61.065	0.000	372.148
XW9: Reagan Test Site	-	0.000	61.254	63.011	-	63.011	62.752	64.105	59.961	61.065	0.000	372.148

Note

Beginning in Fiscal Year (FY) 2018, this Program Element (PE) realigns operational and mission support funding from PE 0605301A (Army Kwajalein Atoll) / Project DX2 (Army Kwajalein Test Ranges and Mission Support). Installation management functions for the Reagan Test Site remain in Project DX2.

A. Mission Description and Budget Item Justification

Space and Missile Defense Command-Army Forces Strategic Command (USASMDC-ARSTRAT) funding is for management and contracting personnel support (salaries and travel) to enable the management of the test and evaluation of major Army and Department of Defense (DoD) missile systems for the Ronald Reagan Ballistic Missile Defense Test Site (RTS). RTS began its funding under Program Element (PE)0605301A, Project DX2 in Fiscal Year (FY) 2014. Beginning in FY 2018, operational and mission support functions at RTS were realigned to PE 0606002A. RTS is a tenant on the United States (U.S.) Army Garrison - Kwajalein Atoll (USAG-KA), located within the Kwajalein Atoll in the Republic of the Marshall Islands, which is a remote, secure activity of the Major Range and Test Facility Base (MRTFB). Its function is to support test and evaluation of major Army and DoD acquisition programs and to provide space operations (Space Situational Awareness; object tracking & identification) in support of U.S. Strategic Command (USSTRATCOM) and National Aeronautics and Space Administration (NASA) scientific and unique space programs. Programs supported include Army Missile Defense, Air Force, and Navy Intercontinental Ballistic Missile (ICBM) developmental and operational tests; Army, Air Force, Navy, and Defense Advanced Research Projects Agency (DARPA) hypersonic Boost-Glide developmental tests; Missile Defense Agency (MDA) operational/demonstration/validation tests; USSTRATCOM space situational awareness requirements (including contributions to the U.S. Space Surveillance Network); and NASA ionospheric studies, space debris tracking, and data collection in support of space experiments. RTS is a government-managed/contractor-operated (GMCO) site and is dependent upon its associated support contractors for operations and maintenance (O&M). Program funds contracting support for end item procurement, life cycle acquisition planning, and solicitation, negotiation, award, execution and management for weapon systems contracts. Program funds contractors to accomplish O&M for RTS instrumentation suites and provides mission essential bandwidth via a fiber optics cable system. The instrumentation suite consists of a number of sophisticated, one-of-a-kind, radar, optical, telemetry, command/control/communications, safety, and data reduction systems. These systems include the four unique radars of the Kiernan Reentry Measurement Site (KREMS); Super Recording Automatic Digital Optical Tracker (SRADOT) long range video-metric tracking systems; high density data recorders for high data-rate telemetry collected by ten antennas; an underwater acoustic impact location system; and data analysis/reduction hardware/software and Continental United States (CONUS) based mission control center. The Advanced Research Project Agency (ARPA) Long-Range Tracking and Instrumentation Radar (ALTAIR), and the Target Resolution Discrimination Experiment (TRADEX) radars located at RTS, are the only radars in this area of operation that have deep-space tracking capability. The Millimeter Wave Radar (MMW) is one of the highest resolution imaging radars in the world, providing critical intelligence data. Funding enables weapon system assessment of operational effectiveness and suitability for the Army, Air Force, Navy and MDA, which all have programs planned that have significant test and data gathering requirements at RTS. This test data cannot be obtained except through the use of technical facilities available on and in the vicinity of RTS. Program supports Army's PATRIOT air defense system; Air Force's Minuteman III ICBM and the Space and Missile Center's associated programs; MDA's Ballistic Missile Defense System, ICBM Targets, and Layered Ballistic Missile Defense operational tests (including: PATRIOT, Terminal High-Altitude Area Defense (THAAD), and Aegis Weapon System), and NASA's space experiments.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		PE 0606002A / Ronald Reagan Ballistic Missile Defense Test Site			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	61.254	62.205	-	62.205
Current President's Budget	0.000	61.254	63.011	-	63.011
Total Adjustments	0.000	0.000	0.806	-	0.806
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	0.806	-	0.806

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0606002A / Ronald Reagan Ballistic Missile Defense Test Site				Project (Number/Name) XW9 / Reagan Test Site			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
XW9: Reagan Test Site	-	0.000	61.254	63.011	-	63.011	62.752	64.105	59.961	61.065	0.000	372.148
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This project will start in FY18.												
A. Mission Description and Budget Item Justification This Project covers operations and mission support functions at the Ronald Reagan Ballistic Missile Defense Test Site and is managed by Program Executive Office Missiles & Space.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Civilian Pay (RTS) Description: Funding covers civilians to perform management oversight of Army and DOD Missile Test programs. FY 2018 Plans: Continuing to provide government personnel support (salaries) to enable the management of the test and evaluation of major Army and DoD missile systems. FY 2019 Plans: Will continue to provide government personnel support (salaries) to enable the management of the test and evaluation of major Army and DoD missile systems. FY 2018 to FY 2019 Increase/Decrease Statement: Civilian pay economic assumptions revised.									-	5.605	5.114	
Title: Temporary Duty (TDY)/Training/Supplies - Military and Civilian Description: Funding will provide for travel and training for civilians and military to assist in the testing of the Army and DoD Missile system Programs. FY 2018 Plans: Continuing to provide government personnel support (training and travel) to enable the management of the test and evaluation of major Army and DoD missile systems. FY 2019 Plans:									-	0.639	0.639	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0606002A / <i>Ronald Reagan Ballistic Missile Defense Test Site</i>	Project (Number/Name) XW9 / <i>Reagan Test Site</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Will continue to provide government personnel support (training and travel) to enable the management of the test and evaluation of major Army and DoD missile systems.				
Title: Outside Obligations/Other Government Agencies Description: Funding provided to other Government Agencies for reimbursable-type work efforts. FY 2018 Plans: Continuing to provide support to test and evaluation of major Army and DoD missile systems. FY 2019 Plans: Will continue to provide support to test and evaluation of major Army and DoD missile systems. FY 2018 to FY 2019 Increase/Decrease Statement: Inflation and increased funds for Kwajalein inner ring submarine fiber optics (SFOTS) upgrade/replacement		-	5.316	8.129
Title: Fiber Optic Cable (Kwajalein Cable System (KCS))/Inner Ring Submarine Description: Fiber Optic Cable is Provides lease cost for Fiber Optic Cable between Kwajalein and Guam. FY 2018 Plans: Continuing to provide funding for lease of the KCS fiber optic cable between Kwajalein Island and Guam, and for backup satellite. FY 2019 Plans: Will continue to provide funding for lease of the KCS fiber optic cable between Kwajalein Island and Guam, and for backup satellite. Will fund annual fiber maintenance agreement. FY 2018 to FY 2019 Increase/Decrease Statement: Inflation		-	11.373	11.443
Title: RTS Contractor Prime Pay (KRS) Description: Provide funding for Prime contractor to perform technical Operation and Maintenance support to support test and space missions. FY 2018 Plans: Continuing to provide technical O&M support (test planning, instrumentation operations and maintenance, systems engineering, flight safety, and launch ordnance) to assure the capability of the Range to support test and space missions. FY 2019 Plans:		-	21.125	24.728

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0606002A / Ronald Reagan Ballistic Missile Defense Test Site	Project (Number/Name) XW9 / Reagan Test Site		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Will continue to provide technical O&M support (test planning, instrumentation operations and maintenance, systems engineering, flight safety, and launch ordnance) to assure the capability of the Range to support test and space missions. Begins buydown of critical maintenance backlog. FY 2018 to FY 2019 Increase/Decrease Statement: Inflation and partial buy down of maintenance backlog				
Title: Contractor Material Description: Provide for materials to maintain range capabilities and support test operations. FY 2018 Plans: Continuing to provide critical non-labor materials to maintain critical range capabilities and prevent obsolescence in support of test operations. FY 2019 Plans: Will continue to provide critical non-labor materials to maintain critical range capabilities and prevent obsolescence in support of test operations. Begins buydown of critical maintenance backlog. FY 2018 to FY 2019 Increase/Decrease Statement: Inflation and partial buy down of maintenance backlog		-	1.834	3.963
Title: Federally Funded Research and Development Centers (FFRDC) Contractor Pay (MIT/LL) Description: Provide for technical expertise to RTS leadership for the overall performance of Range Operations. FY 2018 Plans: Continuing to provide technical advice to RTS leadership in support of Range operations, strategic planning, and technical execution of critical technology. FY 2019 Plans: Will continue to provide technical advice to RTS leadership in support of Range operations, strategic planning, and technical execution of critical technology. FY 2018 to FY 2019 Increase/Decrease Statement: Inflation and technical expertise during Prime Contract transition		-	4.741	5.432
Title: Contractor Pay Meteorological Description: Provide capability for weather sensing capability which allows for test planning and execution of the program.		-	1.954	2.150

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018		
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0606002A / Ronald Reagan Ballistic Missile Defense Test Site	Project (Number/Name) XW9 / Reagan Test Site		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
FY 2018 Plans: Continuing to provide support for sustained weather sensing capabilities, including weather reporting via radar data. This capability provides critical data to test planning and execution. FY 2019 Plans: Will continue to provide support for sustained weather sensing capabilities, including weather reporting via radar data. This capability provides critical data to test planning and execution. FY 2018 to FY 2019 Increase/Decrease Statement: Inflation				
Title: Ground Transportation Description: Provide transportation of material and passenger between Kwajalein and continental U.S. (CONUS). FY 2018 Plans: Continuing to provide mission specific material and passenger transportation via air (Air Mobility Command) and sea (Surface Deployment and Distribution Command) between Kwajalein Atoll and CONUS. FY 2019 Plans: Continuing to provide mission specific material and passenger transportation via air (Air Mobility Command) and sea (Surface Deployment and Distribution Command) between Kwajalein Atoll and CONUS. FY 2018 to FY 2019 Increase/Decrease Statement: Separate Logistic (IMCOM) and Technical (RTS) contracts should reduce shipment amounts charged to range operations.		-	1.490	0.86
Title: Mission Specific Environmental Description: Ensures Range Readiness and all regulatory environmental requirements are compliant with range and test requirements. FY 2018 Plans: Continuing to provide the capability to assess and maintain the Range Readiness and compliance with environmental requirements. FY 2019 Plans: Will continue to provide the capability to assess and maintain the Range Readiness and compliance with environmental requirements. FY 2018 to FY 2019 Increase/Decrease Statement:		-	0.542	0.552

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018	
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0606002A / <i>Ronald Reagan Ballistic Missile Defense Test Site</i>	Project (Number/Name) XW9 / <i>Reagan Test Site</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
Inflation			
Title: USNS Worthy - Shipyard Description: Provide for maintenance to keep all parts of the ship operational for testing. FY 2018 Plans: Provides for required triennial overhaul of marine vessel - Kwajalein Mobile Range Safety System (Worthy). Annual O&M for the Worthy is included in RTS Contractor line above. FY 2018 to FY 2019 Increase/Decrease Statement: No longer funded in XW9		-	6.000
Title: Army Contracting Command (ACC) Support Description: Contracting support to administrator the contract vehicle for the program. FY 2018 Plans: Provide contracting support (salaries, training, travel, etc) to test and evaluation of major Army and DoD Missile System. FY 2018 to FY 2019 Increase/Decrease Statement: No longer funded in XW9		-	0.635
Accomplishments/Planned Programs Subtotals		-	61.254
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army **Date:** February 2018

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0606003A / Counter Intel and Human Intel Modernization							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	2.636	-	2.636	2.685	2.698	2.720	3.282	0.000	14.021
FI9: Counter Intel and Human Intel Modernization	-	0.000	0.000	2.636	-	2.636	2.685	2.698	2.720	3.282	0.000	14.021

A. Mission Description and Budget Item Justification

The Counterintelligence (CI) and Human Intelligence (HUMINT) Modernization Program Element (PE) supports ongoing rejuvenation and development of new critical CI and HUMINT systems, applications, tools, equipment, and capabilities necessary to defeat the foreign intelligence, international terrorist, and insider threats while enhancing our HUMINT collection capability. The required tools provide Army and DoD leadership, commanders, and warfighters the intelligence necessary for making advantageous operational planning, policies, and timely decisions. Funding transferred to PE 0606003 / Project FI9 (Counter Intel and Human Intel Modernization) in FY 2019; requirement was previously reported under PE 0303028A (INTEL SPT TO FORCE XXI) / Project FG2 (Counterintelligence & Human Intel Modernization).

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	2.636	-	2.636
Total Adjustments	0.000	0.000	2.636	-	2.636
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	2.636	-	2.636

Change Summary Explanation

Funding transferred to PE 606003 / Project FI9 Counter Intel and Human Intel Modernization in FY 2019; requirement was previously reported under PE 0303028A (INTEL SPT TO FORCE XXI) / Project FG2 (Counter Intel and Human Intel Modernization).

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0606003A / Counter Intel and Human Intel Modernization				Project (Number/Name) FI9 / Counter Intel and Human Intel Modernization			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FI9: Counter Intel and Human Intel Modernization	-	0.000	0.000	2.636	-	2.636	2.685	2.698	2.720	3.282	0.000	14.021
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Counterintelligence (CI) and Human Intelligence (HUMINT) Modernization Project supports ongoing rejuvenation and development of new critical CI and HUMINT systems, applications, tools, equipment, and capabilities necessary to defeat the foreign intelligence, international terrorist, and insider threats while enhancing our HUMINT collection capability. The required tools provide Army and DoD leadership, commanders, and warfighters the intelligence necessary for making advantageous operational planning, policies, and timely decisions. Funding transferred to 606003 FI9 Counter Intel and Human Intel Modernization in FY 2019; requirement was previously reported under Program Element 0303028A (INTEL SPT TO FORCE XXI) / Project FG2 (Counter Intel and Human Intel Modernization).												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Counterintelligence Activities									-	-	2.636	
Description: The CI and HUMINT Modernization Project supports ongoing rejuvenation and development of new critical CI and HUMINT systems, applications, tools, equipment, and capabilities necessary to defeat the foreign intelligence, international terrorist, and insider threats while enhancing our HUMINT collection capability. The required tools provide Army and DoD leadership, commanders, and warfighters the intelligence necessary for making advantageous operational planning, policies, and timely decisions.												
FY 2019 Plans: Funding supports development & testing of software code integrating existing and new algorithms to analyze multiple data source to record, identify, sort, and prioritize behaviors indicative of espionage, national security compromises, and other foreign and insider threats. The new, more capable software sets will facility counterintelligence analysis, insider threat detection, counterintelligence investigative focus, and automated exchange and display of critical counterintelligence information.												
FY 2018 to FY 2019 Increase/Decrease Statement: Funding transferred to PE 606003 / Project FI9 Counter Intel and Human Intel Modernization in FY 2019; requirement was previously reported under PE 0303028A (INTEL SPT TO FORCE XXI) / Project FG2 (Counter Intel and Human Intel Modernization).												
Accomplishments/Planned Programs Subtotals									-	-	2.636	
C. Other Program Funding Summary (\$ in Millions)												
N/A												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0606003A / <i>Counter Intel and Human Intel Modernization</i>	Project (Number/Name) F19 / <i>Counterl Intel and Human Intel Modernization</i>
C. Other Program Funding Summary (\$ in Millions) Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0606942A / <i>Assessments and Evaluations Cyber Vulnerabilities</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	88.300	-	88.300	0.000	0.000	0.000	0.000	0.000	88.300
FL2: <i>Cyber Vulnerabilities Assessments and Evaluations</i>	-	0.000	0.000	88.300	-	88.300	0.000	0.000	0.000	0.000	0.000	88.300

Note

This Program Element, along with Project FL2, are new starts for Fiscal Year 2019.

A. Mission Description and Budget Item Justification

This Program Element (PE) funds cyber vulnerabilities evaluations of major weapon systems in alignment with Section 1647 of the National Defense Authorization Act (NDAA) for Fiscal Year 2016, and of critical infrastructure in alignment with Section 1650 of NDAA 2017. Efforts in this PE will: 1) identify, assess, and mitigate operational risk from cyber vulnerabilities as it pertains to critical Army weapon systems in an operational configuration; and 2) assure the confidentiality, availability, and integrity of the information and control systems that underpin Army facilities and critical infrastructure by inventorying and assessing Facility-Related Control Systems (FRCS).

Weapon systems evaluations will assess and mitigate operational risk from a peer or near-peer adversary profile in accordance with existing testing requirements of the acquisition cycle. Where applicable, these evaluations will include tabletop exercises, lab assessments, and exercise/operational assessments of Program Executive Officer Command, Control, Communications-Tactical (PEO C3T) and ground weapon systems. Cyber hardening efforts will apply knowledge from weapon systems vulnerability assessments to identify gaps and develop mitigation strategies to reduce operational risk and prioritize resources. Prioritization will be based on mission criticality, impact to readiness, and threat. This PE also provides for enhancement of existing Red Team elements and efforts attributed to Combatant Command mission-level cyber vulnerability assessments.

Evaluations of cyber vulnerabilities at critical infrastructure will focus on Task Critical Assets, Defense Critical Assets, and on units with high priority Quadrennial Defense Review missions and their supporting infrastructure. First, this PE provides for the training of teams to conduct cyber vulnerability evaluations on critical infrastructure. Once trained, these teams will conduct cooperative vulnerability and penetration assessments (Blue Teaming), adversarial assessments (Red Teaming), and assist with conducting assessments of cyber dependencies, vulnerabilities and threats in accordance with DoDI 8501.1 "Risk Management Framework." Funding will also provide for Contractor subject matter expertise to conduct Security Control Assessments and Deep Cyber Resiliency Assessments.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		PE 0606942A / Assessments and Evaluations Cyber Vulnerabilities			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	88.300	-	88.300
Total Adjustments	0.000	0.000	88.300	-	88.300
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	88.300	-	88.300

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0606942A / Assessments and Evaluations Cyber Vulnerabilities				Project (Number/Name) FL2 / Cyber Vulnerabilities Assessments and Evaluations			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FL2: Cyber Vulnerabilities Assessments and Evaluations	-	0.000	0.000	88.300	-	88.300	0.000	0.000	0.000	0.000	0.000	88.300
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element (PE) funds cyber vulnerabilities evaluations of major weapon systems in alignment with Section 1647 of the National Defense Authorization Act (NDAA) for Fiscal Year 2016, and of critical infrastructure in alignment with Section 1650 of NDAA 2017. Efforts in this PE will: 1) identify, assess, and mitigate operational risk from cyber vulnerabilities as it pertains to critical Army weapon systems in an operational configuration; and 2) assure the confidentiality, availability, and integrity of the information and control systems that underpin Army facilities and critical infrastructure by inventorying and assessing Facility-Related Control Systems (FRCS).

Weapon systems evaluations will assess and mitigate operational risk from a peer or near-peer adversary profile in accordance with existing testing requirements of the acquisition cycle. Where applicable, these evaluations will include tabletop exercises, lab assessments, and exercise/operational assessments of Program Executive Officer Command, Control, Communications-Tactical (PEO C3T) and ground weapon systems. Cyber hardening efforts will apply knowledge from weapon systems vulnerability assessments to identify gaps and develop mitigation strategies to reduce operational risk and prioritize resources. Prioritization will be based on mission criticality, impact to readiness, and threat. This PE also provides for enhancement of existing Red Team elements and efforts attributed to Combatant Command mission-level cyber vulnerability assessments.

Evaluations of cyber vulnerabilities at critical infrastructure will focus on Task Critical Assets, Defense Critical Assets, and on units with high priority Quadrennial Defense Review missions and their supporting infrastructure. First, this PE provides for the training of teams to conduct cyber vulnerability evaluations on critical infrastructure. Once trained, these teams will conduct cooperative vulnerability and penetration assessments (Blue Teaming), adversarial assessments (Red Teaming), and assist with conducting assessments of cyber dependencies, vulnerabilities and threats in accordance with DoDI 8501.1 "Risk Management Framework." Funding will also provide for Contractor subject matter expertise to conduct Security Control Assessments and Deep Cyber Resiliency Assessments.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019
Title: Cyberspace Operational Resiliency Assessment ? Platform (CORA-P)	-	-	30.800
Description: CORA-P is the Army's response to Section 1647 of the 2016 National Defense Authorization Act (NDAA) which directed the Department of the Defense (DoD) to evaluate cyber vulnerabilities of major weapon systems. The effort will assess and mitigate operational risk from cyber vulnerabilities of major weapon systems from a peer or near-peer adversary profile in coordination with existing testing requirements of the acquisition cycle.			
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 6		R-1 Program Element (Number/Name) PE 0606942A / <i>Assessments and Evaluations Cyber Vulnerabilities</i>		Project (Number/Name) FL2 / <i>Cyber Vulnerabilities Assessments and Evaluations</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Funding provides for the completion of the eight critical weapon systems already in some stage of the evaluation process. Additionally, provides for the 11 remaining Program Executive Officer Command, Control, Communications-Tactical (PEO C3T) and ground weapon systems identified as a part of the Section 1647 directive by conducting tabletop exercises, lab assessments, and exercise/operational assessments (where applicable). Provides for the enhancement of existing red team elements and efforts attributed to Combatant Command (COCOM) mission level assessments. Cyber hardening efforts will apply the knowledge from weapon systems vulnerability assessments (CORA-P) to identify the gaps, develop mitigation strategies to reduce operational risk and prioritize resources. Prioritization will be based on mission criticality, impact to readiness, and threat. FY 2018 to FY 2019 Increase/Decrease Statement: Planned program begins in Fiscal Year 2019.					
Title: Cyberspace Operational Resiliency Assessment ? Installation (CORA-I) Description: CORA-I is the Army's response to Section 1650 of the 2017 NDAA which directed the DoD to develop and execute a plan to evaluate and mitigate cyber vulnerabilities of Army Installations critical infrastructure. The evaluations will focus on Task Critical Assets, Defense Critical Assets, and on units with high priority Quadrennial Defense Review (QDR) missions and their supporting infrastructure. FY 2019 Plans: Funding provides for the training of teams to conduct cyber vulnerability assessments on critical infrastructure. Once trained these teams will conduct cooperative vulnerability and penetration assessments (Blue Teaming), adversarial assessments (Red Teaming), and assist with conducting assessments of cyber dependencies, vulnerabilities and threats in accordance with DoDI 8510.1 ?Risk Management Framework.? Funding also provides for Contractor subject matter expertise to conduct Security Control Assessments and Deep Cyber Resiliency Assessments. The 2017 Army Cybersecurity Strategy for FRCS established the requirement to inventory and conduct Risk Management Framework on legacy systems. Concurrently, the Unified Facility Criteria 4-010-06 established the requirement to design cybersecurity protections into FRCS within all new MILCON projects. The cyber hardening efforts will apply the knowledge from critical installation vulnerability assessments (CORA-I) to identify the gaps, develop mitigation strategies to FRCS, and prioritize resources. Prioritization will be based on mission criticality, impact to readiness, and threat. FY 2018 to FY 2019 Increase/Decrease Statement: Planned program begins in Fiscal Year 2019.			-	-	57.500
Accomplishments/Planned Programs Subtotals			-	-	88.300

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0606942A / <i>Assessments and Evaluations Cyber Vulnerabilities</i>	Project (Number/Name) FL2 / <i>Cyber Vulnerabilities Assessments and Evaluations</i>
<u>C. Other Program Funding Summary (\$ in Millions)</u> N/A <u>Remarks</u> <u>D. Acquisition Strategy</u> N/A <u>E. Performance Metrics</u> N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0303260A / DEFENSE MILITARY DECEPTION INITIATIVE							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	1.923	1.779	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.702
FA9: Security Initiatives	-	1.923	1.779	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.702

A. Mission Description and Budget Item Justification

The Defense Military Deception Initiative (DMDI) is a response to the Secretariat and Global Security Initiatives to support identified Army Research, Development, Test and Evaluation (RDTE) requirements to support capability, capacity and readiness of Army Military Deception (MILDEC) capabilities. DMDI executes RDTE on MILDEC capabilities, next generation devices, and technologies to support Army's ability to meet current and emerging requirements. DMDI integrates RDTE prototypes with Component programs for acquisition, sustainment and maintenance.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	2.000	1.779	0.000	-	0.000
Current President's Budget	1.923	1.779	0.000	-	0.000
Total Adjustments	-0.077	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.076	-			
• FFRDC Transfer	-0.001	-	-	-	-

Change Summary Explanation

Fiscal Year 2018 is the last year of funding for the Security Initiatives Program.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0303260A / DEFENSE MILITARY DECEPTION INITIATIVE				Project (Number/Name) FA9 / Security Initiatives			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
FA9: Security Initiatives	-	1.923	1.779	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.702
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification The Defense Military Deception Initiative (DMDI) is a response to Secretariat and Global Security Initiatives to support identified Army Research, Development, Test and Evaluation (RDTE) requirements to support capability, capacity and readiness of Army Military Deception (MILDEC) capabilities. DMDI executes RDTE on MILDEC capabilities, next generation devices, and technologies to support Army's ability to meet current and emerging requirements. DMDI integrates RDTE prototypes with Component programs for acquisition, sustainment and maintenance.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Security Initiatives Description: DMDI supports identified Army RDTE requirements related to Defense Security Initiatives aimed at improving Army MILDEC capability, capacity and readiness. DMDI integrates RDTE prototypes with Component programs for acquisition, sustainment and maintenance. FY 2018 Plans: Research and develop high-fidelity next generation decoys and capabilities to meet identified Security initiatives related to Secretary guidance. FY 2018 to FY 2019 Increase/Decrease Statement: FY 2018 is the last year of funding for the Security Initiatives Program.									1.923	1.779	-	
Accomplishments/Planned Programs Subtotals									1.923	1.779	-	
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A												