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

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
1319: Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)					PE 0604378N / Nav Integrated Fire Control-Counter Air Sys Eng							
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	189.359	25.086	25.445	33.429	-	33.429	35.439	34.732	34.392	34.911	Continuing	Continuing
3159: Naval Integrated Fire Control-Counter Air SE&I	189.359	25.086	25.445	33.429	-	33.429	35.439	34.732	34.392	34.911	Continuing	Continuing

A. Mission Description and Budget Item Justification

3159 Naval Integrated Fire Control - Counter Air (NIFC-CA) Systems Engineering Integration and Test (SEI&T) project is a systems engineering effort to extend the Naval Integrated Air and Missile Defense battlespace out to the maximum kinematic range of our weapons. This includes targets beyond the detection range of the shooter, including Engage On Remote (EoR) and Over the Horizon (OTH) targets. The NIFC-CA project exploits capabilities inherent in existing systems, optimizes current and emerging technologies in component system upgrades, integrates them together, and performs kill chain tests, forming an interoperable System of Systems (SoS) to maximize future air defense capabilities. As directed by OPNAV, the project is focused on SEI&T efforts to integrate the From The Sea (FTS) kill chain consisting of the E-2D Advanced Hawkeye, Cooperative Engagement Capability (CEC), AEGIS, and SM-6 missile. This PE will support efforts including system definition and architecture development, performance prediction, performance assessment, system test and risk reduction efforts, system analysis, modeling and simulation, and capability demonstrations for the FTS kill chain. The project also facilitates the development of the concept of operations with the warfighter to maximize effectiveness when deployed with the Fleet and supports NIFC From the Air (FTA) Modeling and Simulation efforts.

<u>B. Program Change Summary (\$ in Millions)</u>	<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	25.750	25.445	26.769	-	26.769
Current President's Budget	25.086	25.445	33.429	-	33.429
Total Adjustments	-0.664	0.000	6.660	-	6.660
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.664	0.000			
• Program Adjustments	0.000	0.000	6.863	-	6.863
• Rate/Misc Adjustments	0.000	0.000	-0.203	-	-0.203

Change Summary Explanation

FY19 increase of \$6.660M due to \$9.0M increase for new NIFC From the Air (FTA) Modeling & Simulation program, the FY19 funding request reduction of \$2.137M to account for the availability of prior year execution balances and rate/misc adjustments.

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Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604378N / Nav Integrated Fire Control-Counter Air Sys Eng				Project (Number/Name) 3159 / Naval Integrated Fire Control-Counter Air SE&I			
COST (\$ in Millions)	Prior Years	FY 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
3159: Naval Integrated Fire Control-Counter Air SE&I	189.359	25.086	25.445	33.429	-	33.429	35.439	34.732	34.392	34.911	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

3159 Naval Integrated Fire Control - Counter Air (NIFC-CA) Systems Engineering Integration and Test (SEI&T) project is a systems engineering effort to extend the Naval Integrated Air and Missile Defense battlespace out to the maximum kinematic range of our weapons. This includes targets beyond the detection range of the shooter, including Engage On Remote (EoR) and Over the Horizon (OTH) targets. The NIFC-CA project exploits capabilities inherent in existing systems, optimizes current and emerging technologies in component system upgrades, integrates them together, and performs kill chain tests, forming an interoperable System of Systems (SoS) to maximize future air defense capabilities. NIFC-CA consists of three kill chains called From the Air (FTA), From the Sea (FTS), and From the Land (FTL). As directed by OPNAV, the project is focused on SEI&T efforts to integrate the From The Sea (FTS) kill chain consisting of the E-2D Advanced Hawkeye, Cooperative Engagement Capability (CEC), AEGIS, and SM-6 missile. This PE will support efforts including system definition and architecture development, performance prediction, performance assessment, system test and risk reduction efforts, system analysis, modeling and simulation, and capability demonstrations for the FTS kill chain. The project also facilitates the development of the concept of operations with the warfighter to maximize effectiveness when deployed with the Fleet.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Integration and Test (I&T) Integrated Product Team (IPT)	10.528	10.320	10.016	0.000	10.016
Articles:	-	-	-	-	-
Description: The Integration and Test (I&T) Integrated Product Team (IPT) develops and executes the test plan to assess the FTS operational capability, performs risk reduction testing leveraging various component system tests. Test data will be used over time to verify, validate, and accredit the FTS simulation federation.					
FY 2018 Plans: - The I&T IPT will continue to plan and execute the two scheduled Live Fire Test Events and conduct follow-on NIFC-CA battlespace assessments for AEGIS Baseline 9 and SM-6 BLK I. - Complete WSMR Desert Ship Upgrades. - Plan and execute WSMR ACB-16 / SM-6 Blk IA Live Fire Event. - Plan for ACB-20 improvements for NIFC-CA.					
FY 2019 Base Plans: - NIFC-CA FTS tests are scheduled every 9 months but are adjusted based on asset availability.					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>- The White Sands Missile Range is being upgraded to Desert Ship Upgrade (DSU) III configuration in FY17-19 to support NIFC-CA Increment 2 testing requirements.</p> <p>- Conduct two Live Fire Events (One SM-6 Blk 1 regression test and One SM-6 Blk 1A). These live fire events will verify the NIFC-CA 2019 capability improvements prior to fleet introduction in FY20. These live fire tests will also support the first Carrier Strike Group (CSG) deployment of the Increment 2 capability.</p> <p>- The capability assessment from COMOPTEVFOR for NIFC-CA Increment 2 capability will occur in FY19.</p> <p>- NIFC-CA Increment 3 risk reduction testing will continue in FY19.</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease of \$.304M due reduced requirements to test and verify that the NIFC-CA capability improvements are ready for fleet introduction.</p>						
<p>Title: NIFC From the Air (FTA) Modeling & Simulation</p> <p align="right">Articles:</p> <p>Description: From the Air (FTA) kill chain provides integrated capabilities to engage advanced threats with E-2D Advanced Hawkeye, the F/A-18A+/C/D Hornet, the F/A-18E/F Super Hornet and EA-18G Growler, F-35 Lightning II, AIM-120 and AIM-9X Missiles, and Link 16 and Tactical Targeting Network Technology Networks.</p> <p>FY 2018 Plans: N/A</p> <p>FY 2019 Base Plans: NIFC FTA Increment 2 and 2A is for Test and Evaluation planning and execution. The NIFC FTA Inc 2 and 2A Cooperative Engagement Modes performance verification and validation requires developing System of Systems level modeling and simulation to predict performance of the integrated systems listed above against advanced threats. NIFC FTA Increment 3 is for requirements definition, allocation, and engineering analyses.</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Funding increase for Test and Evaluation, Modeling and Simulation and requirements.</p>		0.000 -	0.000 -	9.000 -	0.000 -	9.000 -
<p>Title: Engineering Management And System Definition</p>		14.558	15.125	14.413	0.000	14.413

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Articles:		-	-	-	-	-
<p>Description: Engineering management and system definition including the development of the Systems Performance Document (SPD), SoS functional allocations, requirements, traceability, SoS trades studies, SoS information exchange requirements, interface specifications, and sensor network capability analysis. Provides for complete FTS kill chain performance analysis and interface verification through development of a federation of simulations provided directly from the FTS Programs of Record. Program Of record consists of the E-2D Advanced Hawkeye, CEC, AEGIS, and SM-6 missile. Federated SoS simulations support architecture development, scenario development, predictive analysis for testing, and define capabilities and limitations of FTS kill chain performance analysis and interface verification through development of a federation of simulations provided directly from the FTS Programs of Record. Federated SoS simulations support architecture development, scenario development, predictive analysis for testing, and define capabilities and limitations of FTS kill chain for deployment.</p> <p>FY 2018 Plans:</p> <p>- Continue WSMR Desert Ship Upgrades to a AEGIS ACB 16 baseline.</p> <p>- Significant system engineering efforts are required to upgrade WSMR Desert Ship complex to an AEGIS ACB 16 baseline. This will support the AEGIS ACB-16 configuration and SM-6 BLK IA live fire test and will demonstrate improved FTS capability.</p> <p>FY 2019 Base Plans:</p> <p>- Continue Desert Ship ACB-16 updates. Updates support program risk reduction testing for NIFC-CA 2019 capability.</p> <p>- Begin follow-on (NIFC-CA Increment 3) System-of-Systems technical definition and requirements.</p> <p>- Conduct one SM-6 Blk IA Live Fire Event that will demonstrate improved FTS capability.</p> <p>FY 2019 OCO Plans:</p> <p>N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p> <p>Funding decrease of \$.712M due to reduced engineering efforts for ACB 16 updates to the Desert Ship.</p>						
Accomplishments/Planned Programs Subtotals		25.086	25.445	33.429	0.000	33.429

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C. Other Program Funding Summary (\$ in Millions)												
	<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
	• 0604366N: <i>Standard Missile SM-6</i>	2.147	6.191	2.988	-	2.988	5.138	5.398	0.000	0.000	Continuing	Continuing
Remarks												
D. Acquisition Strategy												
Not Applicable												
E. Performance Metrics												
<p>Test Program and analysis conducted using the NIFC-CA Federation will provide data to verify NIFC-CA performance with respect to NIFC-CA MOEs, MOPs, and requirements being tracked as NIFC-CA related in the Pillar Programs. NIFC-CA Federation, once validated using test event data, will be used to update the expected performance of NIFC-CA, as required, and provide feedback to Pillar programs.</p>												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 5						R-1 Program Element (Number/Name) PE 0604378N / Nav Integrated Fire Control-Counter Air Sys Eng				Project (Number/Name) 3159 / Naval Integrated Fire Control-Counter Air SE&I					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	Various	Various : Various	43.994	2.840	Dec 2016	2.791	Dec 2017	3.460	Dec 2018	-		3.460	0.000	53.085	-
Systems Engineering	C/CPFF	JHU/APL : Laurel, MD	3.180	0.525	Dec 2016	0.640	Dec 2017	0.714	Dec 2018	-		0.714	0.000	5.059	-
Systems Engineering	C/CPFF	NGIS : Melbourne, FL	8.201	0.214	Oct 2016	0.238	Oct 2017	0.000		-		0.000	0.000	8.653	-
Systems Engineering	C/CPFF	LM MS2 : Moorestown, NJ	27.497	11.329	Dec 2016	11.810	Dec 2017	15.130	Dec 2018	-		15.130	0.000	65.766	-
Systems Engineering	C/CPFF	Raytheon Co. : St. Petersburg, FL	13.592	0.545	Oct 2016	0.605	Oct 2017	1.088	Oct 2018	-		1.088	0.000	15.830	-
Systems Engineering	WR	COTF : Norfolk, VA	0.785	0.000		0.000		0.000		-		0.000	0.000	0.785	-
Subtotal			97.249	15.453		16.084		20.392		-		20.392	0.000	149.178	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integration and Test	C/CPFF	Raytheon : St. Petersburg, FL	7.392	0.093	Dec 2016	0.095	Dec 2017	0.429	Dec 2018	-		0.429	0.000	8.009	-
Integration and Test	WR	COTF : Norfolk, VA	0.013	0.000		0.000		0.000		-		0.000	0.000	0.013	-
Integration and Test	C/BA	Wallops Island : Wallops Island, VA	0.247	0.000		0.000		0.000		-		0.000	0.000	0.247	-
Integration and Test	WR	NAWC AD : Pax River, MD	0.250	0.000		0.000		0.483	Nov 2018	-		0.483	0.000	0.733	-
Integration and Test	C/CPFF	Lockheed Martin - Moorestown, NJ : Moorestown, NJ	19.281	2.842	Dec 2016	2.480	Dec 2017	3.784	Dec 2018	-		3.784	Continuing	Continuing	Continuing
Integration and Test	WR	PT MUGU : PT Mugu, CA	6.197	0.612	Oct 2016	0.750	Oct 2017	1.034	Oct 2018	-		1.034	0.000	8.593	-
Integration and Test	Various	Various : Various	34.858	4.978	Feb 2017	4.908	Dec 2017	5.061	Dec 2018	-		5.061	Continuing	Continuing	Continuing
Integration and Test	MIPR	Dept of Interior : Boise, ID	2.130	0.210	Jan 2017	0.238	Dec 2017	1.031	Dec 2018	-		1.031	0.000	3.609	-

UNCLASSIFIED

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Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Integration and Test	WR	NSWC/PHD : Port Hueneme, CA	3.123	0.000		0.000		0.212	Dec 2018	-		0.212	Continuing	Continuing	Continuing
Subtotal			73.491	8.735		8.471		12.034		-		12.034	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Planning and Management	C/CPFF	Various : Various	18.619	0.898	Feb 2017	0.890	Dec 2017	1.003	Dec 2018	-		1.003	Continuing	Continuing	Continuing
Subtotal			18.619	0.898		0.890		1.003		-		1.003	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			189.359	25.086		25.445		33.429		-		33.429	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy

Date: February 2018

Appropriation/Budget Activity
1319 / 5

R-1 Program Element (Number/Name)
PE 0604378N / Nav Integrated Fire Control-
Counter Air Sys Eng

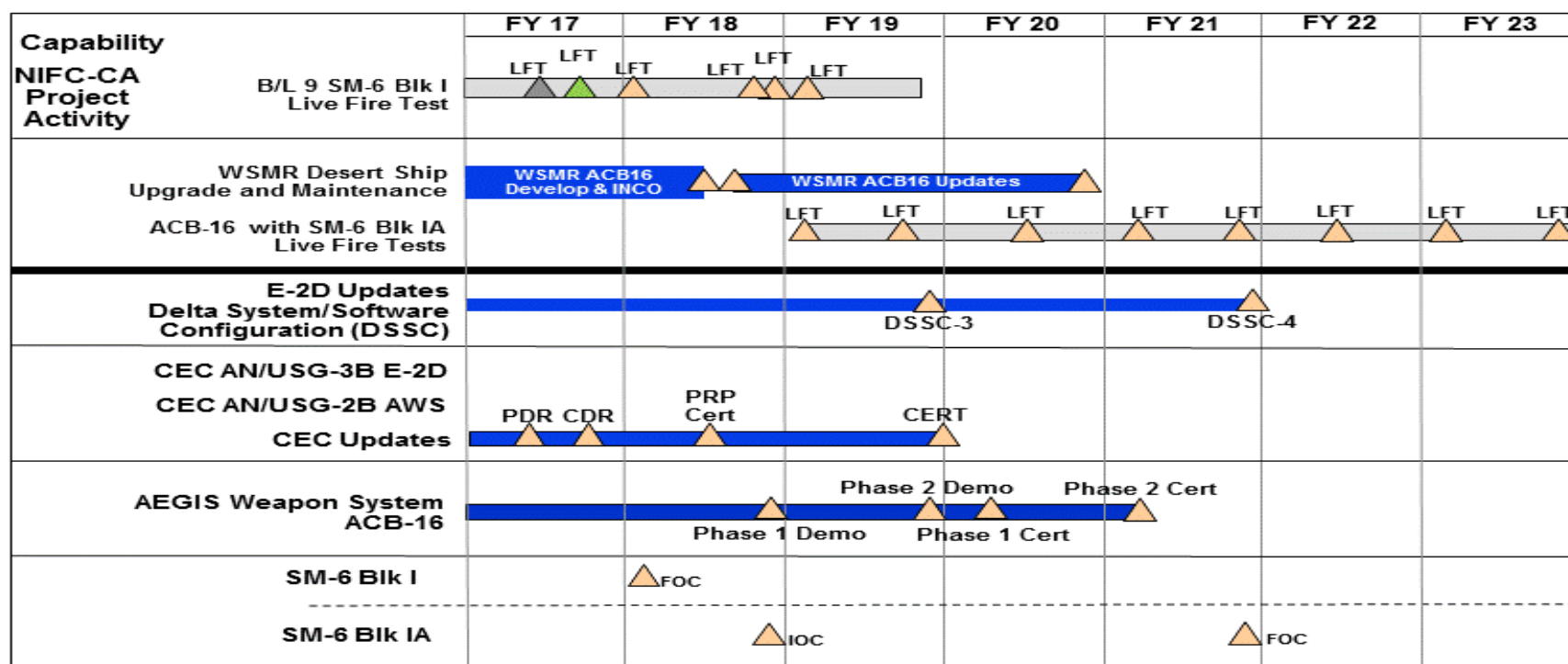
Project (Number/Name)
3159 / Naval Integrated Fire Control-
Counter Air SE&I



NIFC-CA FTS Planning Schedule



RELATED PROGRAMS



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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604378N / Nav Integrated Fire Control-Counter Air Sys Eng	Project (Number/Name) 3159 / Naval Integrated Fire Control-Counter Air SE&I	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3159				
NIFC-CA PROJECT ACTIVITY: NIFC-CA Project Activity: B/L 9 SM-6 Blk I Live Fire Test (Rescheduled to QTR 1 YR 2018)	2	2017	2	2017
NIFC-CA PROJECT ACTIVITY: NIFC-CA Project Activity: B/L 9 SM-6 Blk I Live Fire Test 3/17	3	2017	3	2017
NIFC-CA PROJECT ACTIVITY: NIFC-CA Project Activity: B/L 9 SM-6 Blk I Live Fire Test 1/18	1	2018	1	2018
NIFC-CA PROJECT ACTIVITY: NIFC-CA Project Activity: B/L 9 SM-6 Blk I Live Fire Test 4/18	4	2018	4	2018
NIFC-CA PROJECT ACTIVITY: NIFC-CA Project Activity: B/L 9 SM-6 Blk I Live Fire Test 4/18 2	4	2018	4	2018
NIFC-CA PROJECT ACTIVITY: NIFC-CA Project Activity: B/L 9 SM-6 Blk I Live Fire Test 1/19	1	2019	1	2019
White Sands Missile Range (WSMR): WSMR Desert Ship Upgrade and Maintenance Development and Installation and Check Out	1	2017	3	2018
White Sands Missile Range (WSMR): WSMR Desert Ship Upgrade and Maintenance Development and Installation and Check Out: WSMR ACB-16 Updates	4	2018	4	2020
ACB 16 With SM-6Blk 1A Live Fire Tests: ACB-16 with SM-6 Blk IA Live Fire Test 4/18	1	2019	1	2019
ACB 16 With SM-6Blk 1A Live Fire Tests: ACB-16 with SM-6 Blk IA Live Fire Test 3/19	3	2019	3	2019
ACB 16 With SM-6Blk 1A Live Fire Tests: ACB-16 with SM-6 Blk IA Live Fire Test 2/20	2	2020	2	2020
ACB 16 With SM-6Blk 1A Live Fire Tests: ACB-16 with SM-6 Blk IA Live Fire Test 121	1	2021	1	2021
ACB 16 With SM-6Blk 1A Live Fire Tests: ACB-16 with SM-6 Blk IA Live Fire Test 3/21	3	2021	3	2021
ACB 16 With SM-6Blk 1A Live Fire Tests: ACB-16 with SM-6 Blk IA Live Fire Test 2/22	2	2022	2	2022
ACB 16 With SM-6Blk 1A Live Fire Tests: ACB-16 with SM-6 Blk IA Live Fire Test 1/23	1	2023	1	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018		
Appropriation/Budget Activity 1319 / 5		R-1 Program Element (Number/Name) PE 0604378N / Nav Integrated Fire Control-Counter Air Sys Eng		Project (Number/Name) 3159 / Naval Integrated Fire Control-Counter Air SE&I	
		Start		End	
Events by Sub Project		Quarter	Year	Quarter	Year
ACB 16 With SM-6Blk 1A Live Fire Tests: ACB-16 with SM-6 Blk IA Live Fire Test 4/23		4	2023	4	2023
E-2D Updates Delta System/Software Configuration (DSSC): E-2D UPDATES DELTA SYSTEM SOFTWARE CONFIGURATION (DSSC-3)		4	2019	4	2019
E-2D Updates Delta System/Software Configuration (DSSC): E-2D UPDATES DELTA SYSTEM SOFTWARE CONFIGURATION (DSSC-4)		4	2021	4	2021
CEC Updates: CEC Updates: PDR		2	2017	2	2017
CEC Updates: CEC Updates: CDR		3	2017	3	2017
CEC Updates: CEC Updates: PRP Certification		3	2018	3	2018
CEC Updates: CEC Updates: Certification		4	2019	4	2019
Aegis Weapon System ACB 16: Aegis Weapon System ACB-16: Phase 1 Demonstration		4	2018	4	2018
Aegis Weapon System ACB 16: Aegis Weapon System ACB-16: Phase 2 Demonstration		4	2019	4	2019
Aegis Weapon System ACB 16: Aegis Weapon System ACB-16: Phase 1 Certification		2	2020	2	2020
Aegis Weapon System ACB 16: Aegis Weapon System ACB-16: Phase 2 Certification		2	2021	2	2021
SM-6 Blk 1 & SM-6 Blk 1A: SM-6 Blk I: FOC		1	2018	1	2018
SM-6 Blk 1 & SM-6 Blk 1A: SM-6 Blk IA: IOC		4	2018	4	2018
SM-6 Blk 1 & SM-6 Blk 1A: SM-6 Blk IA: FOC		4	2021	4	2021