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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	PE 0604378N / Nav Integrated Fire Control-Counter Air Sys Eng											
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	151.496	14.903	23.695	25.750	-	25.750	27.359	29.092	25.767	25.694	Continuing	Continuing
3159: <i>Naval Integrated Fire Control-Counter Air SE&I</i>	151.496	14.903	23.695	25.750	-	25.750	27.359	29.092	25.767	25.694	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 Theater Air and Missile Defense battlespace out to the maximum kinematic range of our weapons. This includes targets beyond the detection range of the shooter, including Engage On Remote (EoR) and Over the Horizon (OTH) targets. The NIFC-CA project exploits capabilities inherent in existing systems, optimizes current and emerging technologies in component system upgrades, integrates them together, and performs kill chain tests, forming an interoperable System of Systems (SoS) to maximize future air defense capabilities. As directed by OPNAV, the project is focused on SEI&T efforts to integrate the From The Sea (FTS) kill chain consisting of the E-2D Advanced Hawkeye, Cooperative Engagement Capability (CEC), AEGIS, and SM-6 missile. This PE will support efforts including system definition and architecture development, performance prediction, performance assessment, system test and risk reduction efforts, system analysis, modeling and simulation, and capability demonstrations for the FTS kill chain. The project also facilitates the development of the concept of operations with the warfighter to maximize effectiveness when deployed with the Fleet.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	15.263	23.695	28.436	-	28.436
Current President's Budget	14.903	23.695	25.750	-	25.750
Total Adjustments	-0.360	0.000	-2.686	-	-2.686
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.360	0.000			
• Program Adjustments	0.000	0.000	-1.138	-	-1.138
• Rate/Misc Adjustments	0.000	0.000	-1.548	-	-1.548

Change Summary Explanation

FY15 Decrease in funding due to SBIR/STTR Transfer.

FY17 Decrease in Naval Integrated Fire Control-Counter Air by \$1.138M as required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
3159: Naval Integrated Fire Control-Counter Air SE&I	151.496	14.903	23.695	25.750	-	25.750	27.359	29.092	25.767	25.694	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 Theater 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Integration and Test (I&T) Integrated Product Team	6.110	9.715	10.528	0.000	10.528
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 2015 Accomplishments: Executed the test program, supported post mission analysis, and provided input and analysis of tracking exercises (TrackEx) that led to a successful live fire test (LFT) in June at White Sands Missile Range (WSMR) that has further defined the battlespace. Continued Training and deployed the initial NIFC-CA capability on the Theodore Roosevelt Carrier Strike Group (TR-CSG) in March. Conducted Track-Ex in support of AT SEA 3. USS Princeton at-sea mission scheduled for September 2015 was postponed due to mission gear issues. The mission is expected to be rescheduled in FY16					
FY 2016 Plans:					

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>The I&T IPT will continue to plan and execute test events and conduct follow-on NIFC-CA battlespace assessments for AEGIS Baseline 9 and SM-6 BLK I. Continue planning and conduct associated tracking events, modeling and simulation analysis, including execution of two live fire events in FY16. Continue to support NIFC-CA activities for the White Sands Missile Range (WSMR) Desert Ship Combat System and associated range facilities. Funding provides for the IPT to begin detailed planning for the future testing of NIFC-CA from the Sea capability with upgraded CEC, E2-D, SM-6 BLK IA, and AEGIS Advanced Capability Build (ACB)16. Increase in funding supports the next upgrade to WSMR into a AEGIS ACB-16 configuration supporting the first implementation of the future NIFC-CA design (NIFC-CA 2019 configuration). The NIFC-CA 2019 configuration Live Fire test will provide critical risk reduction data prior to Live Fire Testing At-Sea in the following years. Detailed design work commencing in FY16 will include system engineering and integration aspects of the NIFC-CA 2019 configuration, with follow-on FY17-FY18 development, installation and checkout of the NIFC-CA 2019 configuration in support of Live Fire Testing in FY18.</p> <p>FY 2017 Base Plans: The I&T IPT will continue to plan and execute test events and conduct follow-on NIFC-CA battlespace assessments for AEGIS Baseline 9 and SM-6 BLK I. Continue planning and conduct associated tracking events, modeling and simulation analysis, including execution of a live fire event in 2QTR FY17. Continue to support integration of the NIFC-CA and SM-6 capability into a AEGIS ACB-16 configuration, for land based NIFC-CA testing at White Sands Missile Range (WSMR) Desert Ship Combat System and associated range facilities. FY17 will begin the development, installation and checkout of the NIFC-CA 2019 configuration. This next upgrade to WSMR will be the first implementation of the future NIFC-CA design (NIFC-CA 2019 configuration). The NIFC-CA 2019 configuration Live Fire test will provide critical risk reduction data prior to Live Fire Testing At-Sea in the following years.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Engineering Managment And System Definition</p> <p align="right">Articles:</p> <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. Federated SoS simulations</p>	8.793	13.980	15.222	0.000	15.222
	-	-	-	-	-

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>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 2015 Accomplishments: Continued integration of Pillar program models into the NIFC-CA Federation to support pre-mission and post-mission analysis for the planned NIFC-CA test events for upcoming over land and over sea Trackex and live fire event conducted in June. Conducted verification and initial validation efforts. Continued to ensure that Methods of Effectiveness (MOEs) and Methods of Performance (MOPs) were validated in test plans and interfaced with Pillar programs to maintain and update interface and performance specifications. Updated the NIFC-CA architecture. Updated and maintained NIFC-CA Risk Register. Continued employment of fleet training that supported the deployment of the initial NIFC-CA capability on the TR-CSG in March.</p> <p>FY 2016 Plans: Continue the integration of Pillar program models into the NIFC-CA Federation to support pre-mission and post-mission analysis for the two planned NIFC-CA live fire events in 2nd QTR and 4th QTR 2016. Continue to ensure MOEs and MOPs are validated in test plans and in more stressing test scenarios. Increase in funding is required in FY16 to meet design, development, installation, and check out schedule for the NIFC-CA 2019 configuration Live Fire at White Sands Missile Range while concurrently supporting test efforts (2 Firings per year on 9-month intervals) in FY16. This will support the AEGIS ACB-16 configuration and SM-6 BLK IA live fire tests and will demonstrate improved FTS capability.</p> <p>FY 2017 Base Plans: Significant system engineering efforts are required to upgrade WSMR Desert Ship complex to an AEGIS ACB 16 baseline. FY17 begins the design, development, installation, and check out schedule for the NIFC-CA 2019 configuration Live Fire at White Sands Missile Range while concurrently supporting test efforts. This will support the AEGIS ACB-16 configuration and SM-6 BLK IA live fire tests and will demonstrate improved FTS capability. Continue the integration of Pillar program models into the NIFC-CA Federation to support pre-mission and post-mission analysis for the planned NIFC-CA live fire event in 3QTR FY17. Continue to ensure MOEs and MOPs are validated in test plans and in more stressing test scenarios.</p> <p>FY 2017 OCO Plans:</p>					

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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

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Accomplishments/Planned Programs Subtotals	14.903	23.695	25.750	0.000	25.750

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• 0604366N: <i>Standard Missile SM-6</i>	1.943	2.106	2.215	-	2.215	2.238	0.336	0.319	0.301	Continuing	Continuing

Remarks

D. Acquisition Strategy

Not Applicable

E. Performance Metrics

Test Program and analysis conducted using the NIFC-CA Federation will provide data to verify NIFC-CA performance with respect to NIFC-CA MOEs, MOPs, and requirements being tracked as NIFC-CA related in the Pillar Programs. NIFC-CA Federation, once validated using test event data, will be used to update the expected performance of NIFC-CA, as required, and provide feedback to Pillar programs.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	C/CPFF	Various : Various	38.828	2.630	Feb 2015	2.904	Feb 2016	2.998	Dec 2016	-		2.998	0.000	47.360	-
Systems Engineering	C/CPFF	JHU/APL : Laurel, MD	2.165	0.500	Dec 2014	0.515	May 2016	0.525	Dec 2016	-		0.525	0.000	3.705	-
Systems Engineering	C/CPFF	NGIS : Bethpage, NY	7.826	0.185	Oct 2014	0.190	May 2016	0.214	Oct 2016	-		0.214	0.000	8.415	-
Systems Engineering	C/CPFF	LM MS2 : Moorestown, NJ	10.772	5.977	Mar 2015	10.748	Feb 2016	11.829	Dec 2016	-		11.829	0.000	39.326	-
Systems Engineering	C/CPFF	Raytheon Co. : Tucson, AZ	12.633	0.436	Oct 2014	0.523	May 2016	0.545	Oct 2016	-		0.545	0.000	14.137	-
Systems Engineering	WR	COTF : Norfolk, VA	0.785	0.000		0.000		0.000		-		0.000	0.000	0.785	-
Subtotal			73.009	9.728		14.880		16.111		-		16.111	0.000	113.728	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integration and Test	C/CPAF	Raytheon : Tucson, AZ	7.238	0.064	Nov 2014	0.090	May 2016	0.093	Dec 2016	-		0.093	0.000	7.485	-
Integration and Test	WR	COTF : Norfolk, VA	0.013	0.000		0.000		0.000		-		0.000	0.000	0.013	-
Integration and Test	C/BA	Wallops Island : Wallops Island, VA	0.247	0.000		0.000		0.000		-		0.000	0.000	0.247	-
Integration and Test	WR	NAWC AD : Pax River, MD	0.250	0.000		0.000		0.000		-		0.000	0.000	0.250	-
Integration and Test	C/CPFF	Lockheed Martin - Moorestown, NJ : Moorestown, NJ	15.649	1.440	Mar 2015	2.192	Oct 2015	2.842	Dec 2016	-		2.842	Continuing	Continuing	Continuing
Integration and Test	MIPR	PT MUGU : PT Mugu, CA	5.001	0.598	Dec 2014	0.598	May 2016	0.612	Oct 2016	-		0.612	0.000	6.809	-
Integration and Test	Various	Various : Various	28.272	2.080	Feb 2015	4.873	May 2016	4.984	Feb 2017	-		4.984	Continuing	Continuing	Continuing
Integration and Test	MIPR	Dept of Interior : Boise, ID	1.750	0.190	Jan 2015	0.190	May 2016	0.210	Jan 2017	-		0.210	0.000	2.340	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 5				PE 0604378N / Nav Integrated Fire Control-Counter Air Sys Eng				3159 / Naval Integrated Fire Control-Counter Air SE&I							
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			61.543	4.372		7.943		8.741		-		8.741	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	16.944	0.803	Feb 2015	0.872	Jan 2016	0.898	Feb 2017	-		0.898	Continuing	Continuing	Continuing
Subtotal			16.944	0.803		0.872		0.898		-		0.898	-	-	-
Project Cost Totals			151.496	14.903		23.695		25.750		-		25.750	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy

Date: February 2016

Appropriation/Budget Activity
1319 / 5

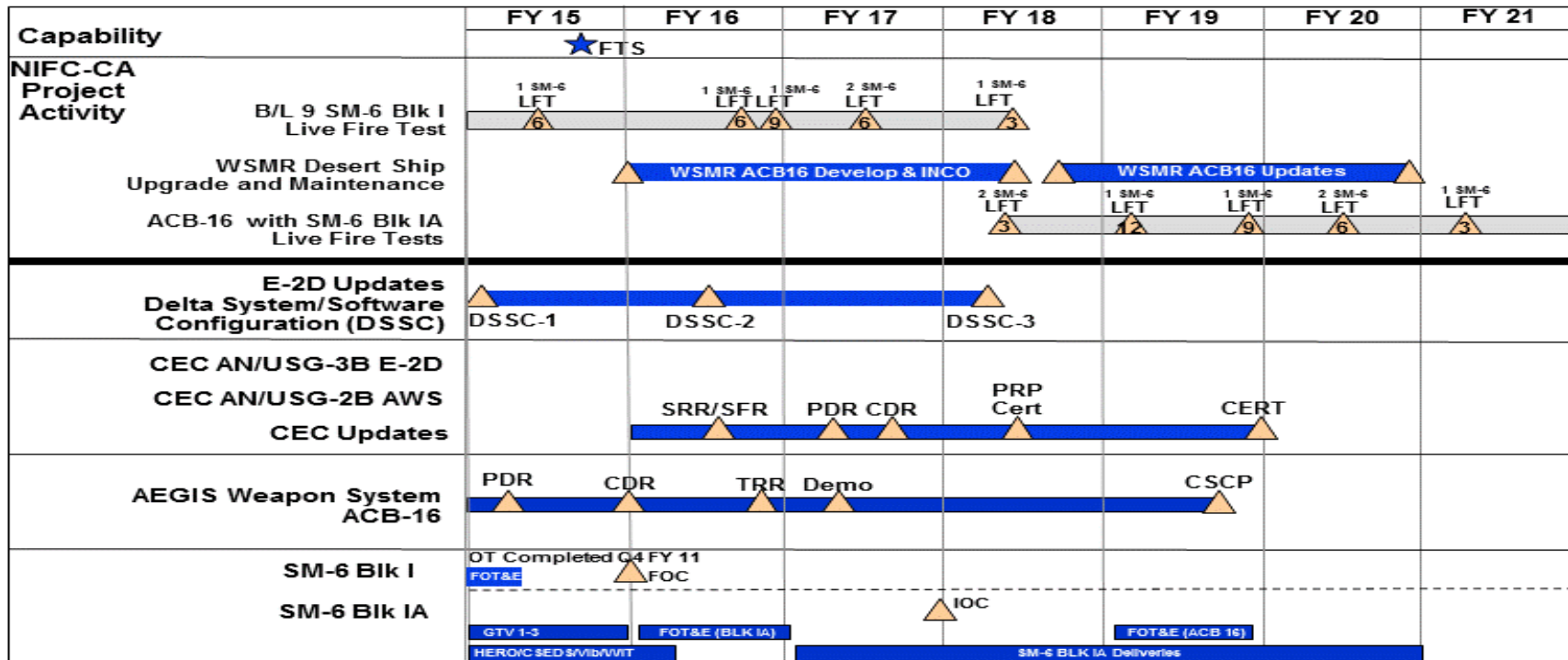
R-1 Program Element (Number/Name)
PE 0604378N / Nav Integrated Fire Control-
Counter Air Sys Eng

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 2017 Navy		Date: February 2016
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				
FROM THE SEA (FTS) CAPABILITY DEPLOYMENT	2	2015	2	2015
NIFC-CA FIRING EVENT 15-1	3	2015	3	2015
NIFC-CA FIRING EVENT 16-1	3	2016	3	2016
NIFC-CA FIRING EVENT 16-2	4	2016	4	2016
NIFC-CA FIRING EVENT 17-1	3	2017	3	2017
NIFC-CA FIRING EVENT 18-1	2	2018	2	2018
NIFC-CA FIRING EVENT 18-2	2	2018	2	2018
NIFC-CA FIRING EVENT 19-1	1	2019	1	2019
NIFC-CA FIRING EVENT 19-2	4	2019	4	2019
NIFC-CA FIRING EVENT 20-1	3	2020	3	2020
NIFC-CA FIRING EVENT 21-1	2	2021	2	2021
WSMR ACB16 Develop & INCO	1	2016	2	2018
WSMR ACB16 Updates	3	2018	4	2020
E-2D UPDATES DELTA SYSTEM SOFTWARE CONFIGURATION 1	1	2015	1	2015
E-2D UPDATES DELTA SYSTEM SOFTWARE CONFIGURATION 2	3	2016	3	2016
E-2D UPDATES DELTA SYSTEM SOFTWARE CONFIGURATION 3	2	2018	2	2018
CEC UPDATE SRR/SFR	3	2016	3	2016
CEC UPDATE PDR	2	2017	2	2017
CEC UPDATE CDR	3	2017	3	2017
CEC UPDATE PRODUCT RELEASE PANEL (PRP) CERTIFICATION	2	2018	2	2018
CEC UPDATE CERTIFICATION	4	2019	4	2019

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

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
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AEGIS WEAPON SYSTEM ACB-16 PDR	2	2015	2	2015
AEGIS WEAPON SYSTEM ACB 16 CDR	4	2015	4	2015
AEGIS WEAPON SYSTEM ACB 16 TRR	4	2016	4	2016
AEGIS WEAPON SYSTEM ACB 16 DEMONSTRATION	2	2017	2	2017
AEGIS WEAPON SYSTEM ACB 16 COMBAT SYSTEM CERTIFICATION PANEL (CSCP)	3	2019	3	2019
SM-6 BLK 1 FOC	4	2015	4	2015
SM-6 BLK 1A IOC	4	2017	4	2017