Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604378N *I Nav Integrated Fire Control-Counter Air Sys Eng*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	166.399	22.960	25.750	25.445	-	25.445	26.769	25.649	25.354	25.862	Continuing	Continuing
3159: *Naval Integrated Fire Control-Counter Air SE&I*	166.399	22.960	25.750	25.445	-	25.445	26.769	25.649	25.354	25.862	Continuing	Continuing

A. Mission Description and Budget Item Justification

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

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	23.695	25.750	27.359	-	27.359
Current President's Budget	22.960	25.750	25.445	-	25.445
Total Adjustments	-0.735	0.000	-1.914	-	-1.914
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.735	0.000			
• Program Adjustments	0.000	0.000	-1.751	-	-1.751
• Rate/Misc Adjustments	0.000	0.000	-0.163	-	-0.163

Change Summary Explanation

The FY 2018 funding request was reduced by $0.550 million to account for the availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	Project (Number/Name) 3159 / *Naval Integrated Fire Control-Counter Air SE&I*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3159: *Naval Integrated Fire Control-Counter Air SE&I*	166.399	22.960	25.750	25.445	-	25.445	26.769	25.649	25.354	25.862	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Integration and Test (I&T) Integrated Product Team (IPT)	9.415	10.528	10.320	0.000	10.320
Articles:	-	-	-	-	-
Description: The Integration and Test (I&T) Integrated Product Team (IPT) develops and executes the test plan to assess the FTS operational capability, performs risk reduction testing leveraging various component system tests. Test data will be used over time to verify, validate, and accredit the FTS simulation federation.					
FY 2016 Accomplishments: Two Live Fire Events were successfully completed in 4Q16. The third Live Fire Test Event that was scheduled in 4Q16 was rescheduled to 3Q17 due to range availability.					
FY 2017 Plans: The I&T IPT will continue to plan and execute the two scheduled Live Fire Test Events and conduct follow-on NIFC-CA battlespace assessments for AEGIS Baseline 9 and SM-6 BLK I. Continue planning and conduct associated tracking events, modeling and simulation analysis, including execution of a live fire events in 2Q17 and 3Q17. Continue to support integration of the NIFC-CA and SM-6 capability into a AEGIS Advanced Capability Build (ACB) ACB-16 configuration, for land based NIFC-CA testing at WSMR Desert Ship Combat					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	**Project (Number/Name)** 3159 / *Naval Integrated Fire Control-Counter Air SE&I*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
System and associated range facilities. FY17 began the development, installation and checkout of the NIFC-CA 2019 configuration using ACB 16 and the SM-6 BlK 1A missile. The NIFC-CA 2019 configuration Live Fire test will provide critical risk reduction data prior to Live Fire Testing At-Sea in the following years. ***FY 2018 Base Plans:*** The I&T IPT will continue to plan and execute the one scheduled Live Fire Test Event and conduct follow-on NIFC-CA battlespace assessments for AEGIS Baseline 9 and SM-6 BLK I. One Live Fire Event scheduled for FY18. Complete WSMR Desert Ship Upgrades. Plan and execute WSMR ACB-16 / SM-6 Blk IA Live Fire Event. Plan for ACB-20 improvements for NIFC-CA. ***FY 2018 OCO Plans:*** N/A					
Title: Engineering Management And System Definition	13.545	15.222	15.125	0.000	15.125
Articles:	-	-	-	-	-
Description: Engineering management and system definition including the development of the Systems Performance Document (SPD), SoS functional allocations, requirements, traceability, SoS trades studies, SoS information exchange requirements, interface specifications, and sensor network capability analysis. Provides for complete FTS kill chain performance analysis and interface verification through development of a federation of simulations provided directly from the FTS Programs of Record. Program Of record consists of the E-2D Advanced Hawkeye, CEC, AEGIS, and SM-6 missile. Federated SoS simulations support architecture development, scenario development, predictive analysis for testing, and define capabilities and limitations of FTS kill chain performance analysis and interface verification through development of a federation of simulations provided directly from the FTS Programs of Record. Federated SoS simulations support architecture development, scenario development, predictive analysis for testing, and define capabilities and limitations of FTS kill chain for deployment. ***FY 2016 Accomplishments:*** Continued the integration of Pillar program models into the NIFC-CA Federation to support pre-mission and post-mission analysis of the two successful NIFC-CA Live Fire events in 4th QTR 2016. Continued to ensure Measure of Effectiveness (MOEs) and Measure of Performance (MOPs) were validated in the test plans and test scenarios. Validated the design, development, installation, and check out schedule for the NIFC-CA 2019 configuration Live Fire at WSMR was on track, while concurrently supporting test efforts in FY16. These 2					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	**Project (Number/Name)** 3159 / *Naval Integrated Fire Control-Counter Air SE&I*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Live Fire Test supported the AEGIS ACB-16 configuration and SM-6 BLK IA live fire tests and demonstrated improved FTS capability. ***FY 2017 Plans:*** Two Live Fire Event scheduled for FY17. Significant system engineering efforts are required to upgrade WSMR Desert Ship complex to an AEGIS ACB 16 baseline. FY17 begins the design, development, installation, and check out schedule for the NIFC-CA 2019 configuration Live Fire at White Sands Missile Range while concurrently supporting test efforts. Continue the integration of Pillar program models into the NIFC-CA Federation to support pre-mission and post-mission analysis for the planned NIFC-CA live fire event in 3QTR FY17. Continue to ensure MOEs and MOPs are validated in test plans and in more stressing test scenarios. ***FY 2018 Base Plans:*** Complete WSMR Desert Ship Upgrades to a AEGIS ACB 16 baseline. Significant system engineering efforts are required to upgrade WSMR Desert Ship complex to an AEGIS ACB 16 baseline. This will support the AEGIS ACB-16 configuration and SM-6 BLK IA live fire test and will demonstrate improved FTS capability. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	22.960	25.750	25.445	0.000	25.445

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• 0604366N: *Standard Missile SM-6*	2.016	2.215	6.191	-	6.191	0.336	0.319	0.301	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

Not Applicable

E. Performance Metrics

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

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	Project (Number/Name) 3159 / *Naval Integrated Fire Control-Counter Air SE&I*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	Various	Various : Various	41.458	2.536	Feb 2016	2.998	Dec 2016	2.791	Dec 2017	-		2.791	0.000	49.783	-
Systems Engineering	C/CPFF	JHU/APL : Laurel, MD	2.665	0.515	May 2016	0.525	Dec 2016	0.640	Dec 2017	-		0.640	0.000	4.345	-
Systems Engineering	C/CPFF	NGIS : Melbourne, FL	8.011	0.190	May 2016	0.214	Oct 2016	0.238	Oct 2017	-		0.238	0.000	8.653	-
Systems Engineering	C/CPFF	LM MS2 : Moorestown, NJ	16.749	10.748	Feb 2016	11.829	Dec 2016	11.810	Dec 2017	-		11.810	0.000	51.136	-
Systems Engineering	C/CPFF	Raytheon Co. : Tucson, AZ	13.069	0.523	May 2016	0.545	Oct 2016	0.605	Oct 2017	-		0.605	0.000	14.742	-
Systems Engineering	WR	COTF : Norfolk, VA	0.785	0.000		0.000		0.000		-		0.000	0.000	0.785	-
		Subtotal	82.737	14.512		16.111		16.084		-		16.084	0.000	129.444	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integration and Test	C/CPFF	Raytheon : Tucson, AZ	7.302	0.090	May 2016	0.093	Dec 2016	0.095	Dec 2017	-		0.095	0.000	7.580	-
Integration and Test	WR	COTF : Norfolk, VA	0.013	0.000		0.000		0.000		-		0.000	0.000	0.013	-
Integration and Test	C/BA	Wallops Island : Wallops Island, VA	0.247	0.000		0.000		0.000		-		0.000	0.000	0.247	-
Integration and Test	WR	NAWC AD : Pax River, MD	0.250	0.000		0.000		0.000		-		0.000	0.000	0.250	-
Integration and Test	C/CPFF	Lockheed Martin - Moorestown, NJ : Moorestown, NJ	17.089	2.192	Oct 2015	2.842	Dec 2016	2.480	Dec 2017	-		2.480	Continuing	Continuing	Continuing
Integration and Test	WR	PT MUGU : PT Mugu, CA	5.599	0.598	May 2016	0.612	Oct 2016	0.750	Oct 2017	-		0.750	0.000	7.559	-
Integration and Test	Various	Various : Various	30.352	4.506	May 2016	4.984	Feb 2017	4.908	Dec 2017	-		4.908	Continuing	Continuing	Continuing
Integration and Test	MIPR	Dept of Interior : Boise, ID	1.940	0.190	May 2016	0.210	Jan 2017	0.238	Dec 2017	-		0.238	0.000	2.578	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	Project (Number/Name) 3159 / *Naval Integrated Fire Control-Counter Air SE&I*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integration and Test	WR	NSWC/PHD : Port Hueneme, CA	3.123	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	65.915	7.576		8.741		8.471		-		8.471	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Planning and Management	C/CPFF	Various : Various	17.747	0.872	Jan 2016	0.898	Feb 2017	0.890	Dec 2017	-		0.890	Continuing	Continuing	Continuing
		Subtotal	17.747	0.872		0.898		0.890		-		0.890	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	166.399	22.960		25.750		25.445		-		25.445	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	**Project (Number/Name)** 3159 / *Naval Integrated Fire Control-Counter Air SE&I*

NIFC-CA
FTS Planning Schedule

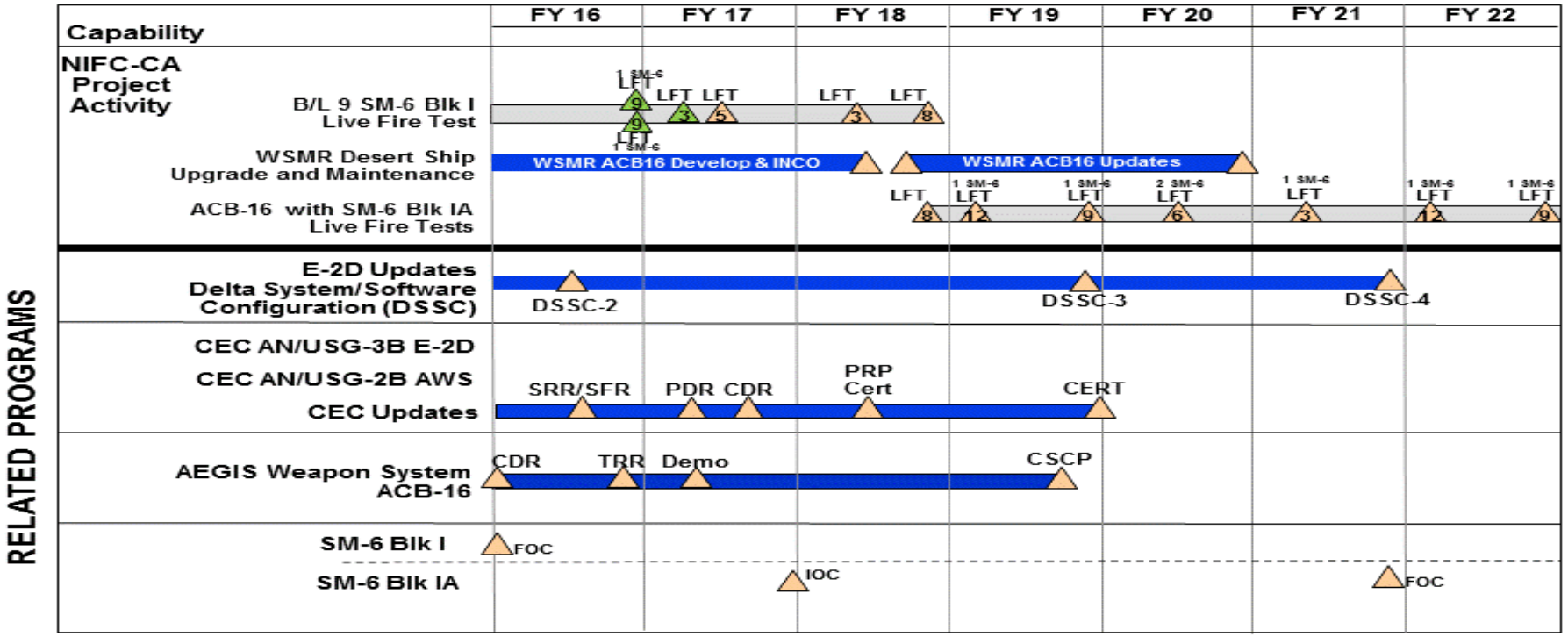

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	**Project (Number/Name)** 3159 / *Naval Integrated Fire Control-Counter Air SE&I*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3159				
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 16-2 (COMPLETED)	4	2016	4	2016
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 16-3 (COMPLETED)	4	2016	4	2016
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 17-1 (COMPLETED)	2	2017	2	2017
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 17-2	3	2017	3	2017
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 18-1	2	2018	2	2018
NIFC-CA B/9 SM-6 BLK 1 LIVE FIRE TEST 18-2	4	2018	4	2018
WSMR DESERT SHIP UPGRADE AND MAINTENANCE (ACB 16 DEVELOP & INCO)	1	2016	2	2018
WSMR DESERT SHIP UPGRADE AND MAINTENANCE (ACB 16 UPGRADES)	3	2018	4	2020
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 18-1	4	2018	4	2018
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 19-1	1	2019	1	2019
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 19-2	4	2019	4	2019
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 20-1	2	2020	2	2020
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 21-1	1	2021	1	2021
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 22-1	1	2022	1	2022
NIFC CA PROJECT ACB-16 WITH SM-6 BLK 1A LIVE FIRE TESTS 22-2	4	2022	4	2022
E-2D UPDATES DELTA SYSTEM SOFTWARE CONFIGURATION (DSSC-2)	3	2016	3	2016
E-2D UPDATES DELTA SYSTEM SOFTWARE CONFIGURATION (DSSC-3)	4	2019	4	2019
E-2D UPDATES DELTA SYSTEM SOFTWARE CONFIGURATION (DSSC-4)	4	2021	4	2021
CEC UPDATES SRR/SFR	3	2016	3	2016
CEC UPDATES PDR	2	2017	2	2017
CEC UPDATES CDR	3	2017	3	2017

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604378N / *Nav Integrated Fire Control-Counter Air Sys Eng*	**Project (Number/Name)** 3159 / *Naval Integrated Fire Control-Counter Air SE&I*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CEC UPDATES PRP CERTIFICATION	3	2018	3	2018
CEC UPDATES CERTIFICATION	4	2019	4	2019
AEGIS WEAPON SYSTEM ACB 16 CDR	1	2016	1	2016
AEGIS WEAPON SYSTEM ACB 16 TRR	4	2016	4	2016
AEGIS WEAPON SYSTEM ACB 16 DEMO	2	2017	2	2017
AEGIS WEAPON SYSTEM ACB 16 COMBAT SYTEM CERTIFICATION PANEL (CSCP)	3	2019	3	2019
SM-6 BLK 1 FOC	1	2016	1	2016
SM-6 BLK 1A IOC	4	2017	4	2017
SM-6 Blk IA: FOC	4	2021	4	2021