Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy	Date: February 2015
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0204136N *I F/A-18 Squadrons*

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	4,712.891	110.487	86.216	133.265	-	133.265	233.175	185.194	166.243	116.013	Continuing	Continuing
1662: *F/A-18 Improvement*	4,006.957	107.472	83.152	118.243	-	118.243	233.175	185.194	166.243	116.013	Continuing	Continuing
2065: *F/A-18 Radar Upgrade*	705.934	3.015	3.064	15.022	-	15.022	-	-	-	-	-	727.035

A. Mission Description and Budget Item Justification

The F/A-18 is required to perform multiple missions. Capabilities of the F/A-18 weapon system and ancillary equipment can be upgraded to accommodate and incorporate new or enhanced weapons as well as advances in technology to respond effectively to emerging future threats. Continued F/A-18 E/F and EA-18G "Flight Plan" spiral capability development is critical to the baseline of the Super Hornet next generation mission system capability and maintaining tactical relevance in support of Navy Aviation Plan 2030. Development continues for a platform solution to threat Advanced Electronic Attack and Counter-Electronic Attack (CEA). F/A-18 solutions to CEA include upgrades to existing sensors such as F/A-18 Radar Upgrade, Infrared Search and Track Block I, and development of a fused picture between these sensors, such as Multi-Sensor Integration Phase III (the phases of Multi-Sensor Integration are being rolled up under the title of Multi-System Integration in FY15, programmatic name change only). Additionally, continued advanced development engineering for improvements in reliability and maintainability are required to ensure maximum benefit is achieved through reduced cost of ownership and to provide enhanced availability.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	112.618	76.216	56.193	-	56.193
Current President's Budget	110.487	86.216	133.265	-	133.265
Total Adjustments	-2.131	10.000	77.072	-	77.072
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	10.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.130	-			
• Program Adjustments	-	-	76.500	-	76.500
• Rate/Misc Adjustments	-0.001	-	0.572	-	0.572

Change Summary Explanation

The FY 2016 funding request was reduced by $5.442 million to account for the availability of prior year execution balances.

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy	Date: February 2015
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Technical:
1662: Not Applicable

2065: Not Applicable

Schedule:
1662: The System Configuration Set (SCS) schedule has had multiple changes due to issues discovered during developmental and operational test requiring additional development time. Schedule changes affect the software development efforts for the Infra-Red Search and Track (IRST), Sensor Integration, Multi-Sensor Integration (MSI) Phase II, MSI Phase III. Some specific changes include the IRST Milestone C review to 1st quarter FY2015, IOC moved to 3rd quarter of FY2018, and Full Rate Production (FRP) moved to 3rd quarter FY2017.

2065: The SCS schedule has had multiple changes due to issues discovered during developmental and operational test requiring additional development time. Schedule changes affect the software efforts for RADAR.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 1662 / *F/A-18 Improvement*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
1662: *F/A-18 Improvement*	4,006.957	107.472	83.152	118.243	-	118.243	233.175	185.194	166.243	116.013	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Multi-Sensor Integration Phases II and III efforts are continued but renamed Multi-System Integration since FY15.

A. Mission Description and Budget Item Justification

F/A-18 Improvement (1662): The F/A-18 is a multi-mission strike fighter aircraft that is used in Air-to-Air, strike, surveillance, reconnaissance and tanking roles through selected use of external equipment (fuel tanks, tactical and reconnaissance pods, and various ordnance launching racks). Additional capabilities are required for interoperability in a network-centric tactical environment. In order to respond effectively to emerging future threats, F/A-18 aircraft capabilities are being expanded and upgraded to incorporate new/enhanced weapons systems and avionics including Dual Mode Weapons, a Counter-Electronic Attack, Infra-red Search and Track integrated with the Active Electronically Scanned Array Radar to provide Narrow Band High Gain Electronic Attack, Distributed Targeting precision strike capability through a Distributed Targeting System, and Sensor Integration through Multi-Sensor Integration Phase I/II/III capability which is renamed beginning in FY15 as Multi-System Integration. Continued advanced development engineering and analysis of hardware/software is required to successfully optimize fleet F/A-18 weapon systems for interoperability in a network centric tactical environment (such as Naval Integrated Fire Control-Counter Air), to include: enhanced software capabilities, potential new hardware development, enhanced existing hardware, and enhanced network centric capabilities. Additionally, continued effort is needed to perform technical evaluations, modeling and simulations, investigative flight testing, enhanced software modifications based on reported fleet deficiencies and beginning in FY14 the development and testing of design modifications to address obsolescence issues with the F/A-18 weapon system and ancillary equipment. Funding has been added starting in FY 2012 for the Automatic Ground Collision Avoidance System/Automated Terrain Avoidance and Warning System which will integrate currently implemented manual methodologies to provide not only aural and visual cues/advisories but also automatic initiation of aircraft recovery and subsequent return of control to the pilot following recovery. This funding line continues F/A-18E/F "Flight Plan" spiral capability development, to include Multi-Sensor Integration Phase II and Phase III capability (programmatic name change began in FY15 to Multi-System Integration) and further Flight Plan Engineering and System Configuration Set development and integration. This budget continues funding for F/A-18A-F Test Wing Maintenance support, funds development efforts needed for integration of air launched laser guided rockets on F/A-18 A+/C/D and the development and testing required for the integration of the Small Diameter Bomb II and Joint Miniature Munitions-Bomb Rack Unit on the F/A-18E/F Super Hornet.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Electro-Optical Infra-Red Search and Track (IRST) Phase I	57.717	40.157	43.365	-	43.365
Articles:	-	-	-	-	-
Description: Technology development and engineering and manufacturing development of an IRST sensor for the F/A-18 E/F.					
FY 2014 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Continued Engineering and Development Phase and Integration Testing-C Flight Test. ***FY 2015 Plans:*** Complete Engineering and Development Phase (hardware and software) to include Engineering Development Model conversion. Conduct Integrated Baseline Review 2 and Operational Testing Readiness Review. Complete Integration Testing and start production on LRIP-1 (APN funded). Completed Milestone C Review. ***FY 2016 Base Plans:*** Continue Engineering and Development Phase (hardware and software) to include completion of Engineering Development Model conversion for Block I and Block II. Begin additional development efforts for fleet required Long Wave Infrared Search and Track (LWIRST). Conduct Integrated Baseline Review 2 and Operational Test Readiness Review. Complete Integration Testing and start production on LRIP-2 (APN funded). ***FY 2016 OCO Plans:*** N/A					
Title: Sensor Integration - Air to Air, Air to Ground and Maritime Multi-Sensor Integration Phase II	10.195	-	-	-	-
Articles:	-	-	-	-	-
Description: Funding will be used to expand track and correlation support from emitting targets and tracks to improve lethality against stationary or moving targets. The H10E effort is currently in the requirements definition/ allocation phase, with expected fleet introduction in FY 2014. ***FY 2014 Accomplishments:*** Complete Multi-Sensor Integration Phase II development with Fleet Release of System Configuration Set H10E. Effort includes software development and testing inclusive of Wingman Compatibility improvements such as Unique Identification, Enhanced Interference Blanking Unit and other software updates affecting the Integrated Defensive Counter Measures suite of electronic warfare hardware. ***FY 2015 Plans:*** N/A ***FY 2016 Base Plans:*** N/A ***FY 2016 OCO Plans:*** N/A					
Title: Sensor Integration - Counter Electronic Attack / Multi-Sensor Integration Phase III	14.470	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Articles:	-	-	-	-	-
Description: Multi-Sensor Integration Phase III utilizes previous Multi-Sensor Integration upgrades and combines them in H12 System Configuration Set with display improvements to enhance Air to Air & Counter Electronic Attack sensor integration. Multi-Sensor Integration Phase III capability focuses are: Display firmware upgrade (allows existing processors to be fully utilized) coupled with display symbology/Crew Vehicle Interface improvements, and Air to Air Mission Tactical Picture improvements. Multi-Sensor Integration Phase III capability is common to the F/A-18E/F and EA-18G. ***FY 2014 Accomplishments:*** Continued Multi-Sensor Integration system software design and development, main focus of funded effort is in the H12 System Configuration Set for display improvements and other updates affecting air to air and Counter Electronic Attack sensor integration; development and testing inclusive of Wingman Compatibility improvements such as Unique Identification, Enhanced Interference Blanking Unit and other software updates affecting the Integrated Defensive Counter Measures suite of electronic warfare hardware. Begin integration and testing efforts. ***FY 2015 Plans:*** Multi-Sensor Integration has been programmatically renamed as Multi-System Integration beginning in FY15, prior year efforts are continued in FY15 under the Multi-System Integration project. ***FY 2016 Base Plans:*** N/A ***FY 2016 OCO Plans:*** N/A					
Title: Multi-System Integration	-	14.486	38.131	-	38.131
Articles:	-	-	-	-	-
Description: Multi-System Integration was a programmatic name change in FY15 which replaced the previously funded Multi-Sensor Integration Phase III. Multi-System Integration migrates from the previous Multi-Sensor Integration Phased approach and allows for insertion of new technologies and requirements to keep pace with rapidly evolving warfighter demands. Also, includes a naming convention change in regards to System Configuration Set (SCS) builds 27, 29 & 31. Initially all "X" labeled builds to include Block I Super Hornets, now 27, 29, & 31 will no longer include Super Hornets thus going back to a "C" SCS label designation to include only legacy A-D aircraft.					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
FY 2014 Accomplishments: N/A ***FY 2015 Plans:*** Multi-System Integration will continue efforts begun with Multi-Sensor Integration Phase III including system software design and development. Primary efforts will be software driven through the development, integration and testing of System Configuration Sets H12 and H14. Decision Superiority gaps in Air Warfare will be addressed through the ongoing integration of weapons and sensors combined with display improvements to enhance air-to-surface, air-to-air and Counter Electronic Attack sensor integration. Upgrades to display firmware, display symbology, Crew Vehicle Interface improvements and air-to-air Mission Tactical Picture improvements. Development and Integration of Precision Approach Landing Capability with Civilian Interoperability functionality implemented through a combined hardware and software solution utilizing a Civilian Instrument Landing System and Space Based Augmentation System including a Multi-Mode Receiver and Space Based Augmentation System enabled GPS receiver. Continued updates to Wingman Compatability improvements such as Unique Identification and Enhanced Interference Blanking Unit and continued updates to Integrated Defensive Counter Measures suite of electronic warfare hardware. ***FY 2016 Base Plans:*** Multi-System Integration will continue efforts begun with Multi-Sensor Integration Phase III including system software design and development. Primary efforts will be software driven through the development, integration and testing of System Configuration Sets H12, H14 and H16. Decision Superiority gaps in Air Warfare will be addressed through the ongoing integration of weapons and sensors combined with display improvements to enhance air-to-surface, air-to-air and Counter Electronic Attack sensor integration. Upgrades to display firmware, display symbology, Crew Vehicle Interface improvements and air-to-air Mission Tactical Picture improvements. Development and Integration of Precision Approach Landing Capability with Civilian Interoperability functionality implemented through a combined hardware and software solution utilizing a Civilian Instrument Landing System and Space Based Augmentation System including a Multi-Mode Receiver and Space Based Augmentation System enabled GPS receiver. Continued updates to Wingman Compatability improvements such as Unique Identification and Enhanced Interference Blanking Unit and continued updates to Integrated Defensive Counter Measures suite of electronic warfare hardware. ***FY 2016 OCO Plans:*** N/A					
Title: Flight Plan Engineering / System Configuration Set Development and Integration	6.165	10.409	29.201	-	29.201
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Description: Continued F/A-18 E/F and EA-18G "Flight Plan" spiral capability development is critical to the baseline of the Super Hornet next generation mission system capability. Funding will support the development, test and integration efforts required to maintain tactical relevance in support of Navy Aviation Plan 2030.					
FY 2014 Accomplishments: Flight Plan Engineering efforts to include F/A-18E/F improvements necessary for Super Hornet relevance and tactical supremacy; Navy Integrated Fire Control-Counter Air system configuration set requirements to support Navy Integrated Air and Missile Defense capability requirements and enhance F/A-18 Cooperative Engagement Capability. Funding will also continue System Configuration Sets for Higher Order Language H block development and test tasking.					
FY 2015 Plans: Continue Flight Plan Engineering efforts to include F/A-18E/F improvements necessary for Super Hornet relevance and tactical supremacy; Navy Integrated Fire Control-Counter Air system configuration set requirements to support Navy Integrated Air and Missile Defense capability requirements and enhance F/A-18 Cooperative Engagement Capability. Funding supports development (hardware and software), test and integration efforts for Flight Plan requirements such as Distributed Targeting Processor-Networked to include Aided Target Recognition, Stationary Target Recognition, Maritime Multiple Target Track and Engagement, Multi-Level Security, Strike Accelerator and Advanced Tactical Data Link; Display Improvements for enhanced sensor integration; Tactical Targeting Network Technology internet protocol capability; and Precision Approach and Landing Capability.					
FY 2016 Base Plans: Continue Flight Plan Engineering efforts to include F/A-18E/F improvements necessary for Super Hornet relevance and tactical supremacy; Navy Integrated Fire Control-Counter Air system configuration set requirements to support Navy Integrated Air and Missile Defense capability requirements and enhance F/A-18 Cooperative Engagement Capability. Funding supports development (hardware and software), test and integration efforts for Flight Plan requirements such as Distributed Targeting Processor-Networked to include Aided Target Recognition, Stationary Target Recognition, Maritime Multiple Target Track and Engagement, Multi-Level Security, Strike Accelerator and Advanced Tactical Data Link; Display Improvements for enhanced sensor integration; Tactical Targeting Network Technology internet protocol capability; Flight Path Control (Magic Carpet); and Precision Approach and Landing Capability, in support of Integrated Capability Package 2 and 3.					
FY 2016 OCO Plans:					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
Title: Test Wing Maintenance Conversion	6.500	8.000	6.846	-	6.846
Articles:	-	-	-	-	-
Description: Funding supports maintenance of aircraft at NAVAIR Test Wing used to support Program Office objectives. ***FY 2014 Accomplishments:*** Performed aircraft maintenance on Test Wing Aircraft. Decrease in planned flight testing over FY13 as a result of reduced budget authority and planned efforts. ***FY 2015 Plans:*** Perform aircraft maintenance on Test Wing aircraft. FY15 restores Test Wing funding to previously planned levels. ***FY 2016 Base Plans:*** Perform aircraft maintenance on Test Wing aircraft. ***FY 2016 OCO Plans:*** N/A					
Title: Flight Plan Engineering/Brimstone (Cong add)	-	10.000	-	-	-
Articles:	-	-	-	-	-
Description: This funding is for Brimstone weapon system qualification for the F/A-18 aircraft. ***FY 2014 Accomplishments:*** N/A ***FY 2015 Plans:*** Conduct missile and launcher subsystem qualification efforts, characterization of system performance and airworthiness analyses with Boeing Aircraft Company (BAC). Conduct qualification testing which will culminate in the delivery of specific reports of test results for each test effort and in the delivery of BAC analyses for weapon/launcher interfaces with the F/A-18. ***FY 2016 Base Plans:*** N/A ***FY 2016 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
Title: Automatic Ground Collision Avoidance System /Automated Terrain Avoidance and Warning System	5.223	-	-	-	-
Articles:	-	-	-	-	-
Description: Automatic Ground Collision Avoidance System /Automated Terrain Avoidance and Warning System will preserve force structure by reducing attrition of pilots and aircraft that result from Controlled Flight into Terrain (CFIT). CFIT occurs at greater rates on fighter attack aircraft and is a leading cause of loss of life and loss of combat capability within the DoD aviation community. At full implementation, Automatic Ground Collision Avoidance System /Automated Terrain Avoidance and Warning System will integrate currently implemented manual methodologies to provide not only aural and visual cues/advisories, but also automatic initiation of aircraft recovery and subsequent return of control to the pilot following recovery. Funding supports Automatic Ground Collision Avoidance System/Automated Terrain Avoidance and Warning System studies, analysis and functional requirements; communication, navigation and identification related development and integration efforts. ***FY 2014 Accomplishments:*** Continued Automatic Ground Collision Avoidance System/Automated Terrain Avoidance and Warning System software development and design. Continue communications, navigation and identification equipment (hardware and software) development, integration, test and evaluation. Reduced budget authority causing suspension of planned flight test events. ***FY 2015 Plans:*** N/A ***FY 2016 Base Plans:*** N/A ***FY 2016 OCO Plans:*** N/A					
Title: Small Diameter Bomb II Integration	7.102	-	-	-	-
Articles:	-	-	-	-	-
Description: The F/A-18E/F Super Hornet is an objective platform for employment of the Small Diameter Bomb II (SDB II) and the Joint Miniature Munitions Bomb Rack Unit (JMM BRU). This program funds the hardware and software design, early development, integration and testing required to successfully integrate SDB II/JMM BRU					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
on the F/A-18E/F. SDB II is being developed by the USAF. Beginning FY15 funding will be in PE 0604329N PU 1663 to continue efforts. ***FY 2014 Accomplishments:*** System Specification and design efforts, Joint Miniature Munitions Bomb Rack Unit (JMM BRU) technical development and integration efforts. System Configuration Set software development and integration. Ground and Flight testing, procurement of JMM BRU prototypes. ***FY 2015 Plans:*** Funding moved to PE 0604329N Small Diameter Bomb (SDB) ***FY 2016 Base Plans:*** N/A ***FY 2016 OCO Plans:*** N/A					
Title: F/A-18 Obsolescence Redesign	0.100	0.100	0.700	-	0.700
Articles:	-	-	-	-	-
Description: Develop and test modifications to address obsolescence issues. ***FY 2014 Accomplishments:*** Develop and test design modifications to hardware components and software systems in response to F/A-18 weapon system and ancillary equipment obsolescence issues. ***FY 2015 Plans:*** Develop and test design modifications to hardware components and software systems in response to F/A-18 weapon system and ancillary equipment obsolescence issues. ***FY 2016 Base Plans:*** Develop and test design modifications to hardware components and software systems in response to F/A-18 weapon system and ancillary equipment obsolescence issues. ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	107.472	83.152	118.243	-	118.243

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• APN/0145: *F/A-18E/F*	180.056	-	-	-	-	-	-	-	-	-	44,435.723
• APN/0145C: *F/A-18EF AP*	27.335	-	-	-	-	-	-	-	-	-	1,641.555
• APN/0143: *EA-18G*	1,893.918	1,503.547	-	-	-	-	-	-	-	-	15,140.710
• APN/05250: *F-18 SERIES MOD*	755.974	705.830	978.756	8.000	986.756	1,066.037	1,189.911	1,369.316	1,451.845	6,339.287	19,840.342
• RDTEN/3063: *EA-18G DEVELOPMENT*	10.550	18.730	56.921	-	56.921	47.261	104.359	56.413	40.591	Continuing	Continuing

Remarks

D. Acquisition Strategy

The F/A-18 Improvement program consists of extensive spiral development efforts mapped out in the capability-based approach F/A-18 E/F "Flight Plan." These efforts are critical to the baseline of the Super Hornet next generation mission system capability and maintaining tactical relevance in support of Navy Aviation Plan 2030. The major programs within the F/A-18 Improvement project are based on six Weapon System Capabilities: Distributed Targeting Air to Ground and Maritime, Distributed Targeting Air to Air, Net Centric Operations/Battle Space Management, Sensor Integration, Air to Ground and Maritime Attack, and Air to Air Attack. The major efforts included in this project are: Dual Mode Weapons integration; an Infra-Red Search and Track; Distributed Targeting capability through a Distributed Targeting System; Multi-Sensor Integration Phase I, Phase II and Phase III capability (programmatic name change to Multi-System Integration began in FY15); continued advanced development and F/A-18E/F Flight Plan engineering and analysis; continued enhanced software capabilities development; and engineering support to perform technical evaluations, modeling and simulations, and investigative flight testing.

- Infra-Red Search and Track (IRST). The IRST Block I program is a Navy program in the Engineering Manufacturing and Development (EMD) phase. A Block I system will be developed by the Navy that will meet requirements for a Counter-Electronic Attack capability. This capability will reach Initial Operational Capability (IOC) in FY 2018.
- Sensor Integration. Sensor Integration development is provided on a sole source cost plus fixed fee contract on a Research and Development Basic Ordering Agreement to Raytheon and Boeing.
- Integration of Automatic Ground Collision Avoidance System/Automated Terrain Avoidance and Warning System is envisioned to only require changes to the software System Configuration Set. Studies and analyses are needed to identify the appropriate implementation method.
- Integration of Small Diamter Bomb Increment II and the Joint Miniature Munitions Bomb Rack Unit is software driven with ground and flight test requirements.

E. Performance Metrics

IRST Program achieved MS B on 17 June 2011, achieved MS C on 02 December 2014, and scheduled for IOC in 3rd Quarter of FY2018.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AGCAS/ATAWS (Automatic Ground Collision Avoidance System/Automated Terrain Avoidance and Warning System) Systems Engineering	WR	NAWCAD : Pax River, MD	3.053	2.200	Dec 2013	-		-		-		-	-	5.253	-
IRST - Primary Hardware Development Infra-Red Search and Track (IRST)	C/CPIF	Boeing : St. Louis, MO	131.748	22.964	Nov 2013	9.479	Nov 2014	24.748	Nov 2015	-		24.748	-	188.939	188.939
Flight Plan/SCS Development(Magic Carpet)	C/CPIF	GE : Various	0.000	-		-		5.000	Mar 2016	-		5.000	-	5.000	5.000
Flight Plan/SCS Development	WR	NAWCAD : Pax River, MD	0.000	-		4.331	Nov 2014	1.820	Nov 2015	-		1.820	-	6.151	-
Flight Plan/Brimstone	Various	Various : Various	0.000	-		10.000	Aug 2015	-		-		-	-	10.000	-
Flight Plan/SCS Development (Magic Carpet)	C/CPIF	Boeing : St. Louis, MO	0.000	-		-		14.421	Dec 2015	-		14.421	-	14.421	14.421
Multi System Integration - Develop Sensor Integration	Various	Various : Various	0.000	-		-		1.500	Feb 2016	-		1.500	Continuing	Continuing	Continuing
Prior Year Prod Dev cost no longer funded in FYDP	Various	Various : Various	575.234	-		-		-		-		-	-	575.234	-
		Subtotal	710.035	25.164		23.810		47.489		-		47.489	-	-	-

Remarks

Started in FY15 all Sensor Integration (SSG/SEI, IDECM, HGESM) and Multi-Sensor Integration Phases are executed as part of the Multi-System Integration project as a programmatic name change. Flight Plan/SCS started in FY15 in support of Integrated Capability Packages(ICP) 2 and 3 Counter-Electronic Attack (CEA) requirements. FY15 Congressional add for Brimstone Dual mode.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
IRST - Software (S/W) Development	WR	NAWCWD : China Lake, CA	1.575	0.889	Dec 2013	8.916	Dec 2014	1.370	Dec 2015	-		1.370	Continuing	Continuing	Continuing
IRST - Development Support	WR	NAWCWD : China Lake, CA	6.018	0.504	Dec 2013	0.372	Dec 2014	0.332	Dec 2015	-		0.332	Continuing	Continuing	Continuing
IRST - Development Support	WR	NAWCAD : Pax River, MD	10.569	2.500	Dec 2013	2.798	Dec 2014	2.100	Dec 2015	-		2.100	Continuing	Continuing	Continuing
IRST - Development Support	WR	NAWCAD : Lakehurst, NJ	1.349	0.814	Dec 2013	0.844	Dec 2014	0.707	Dec 2015	-		0.707	Continuing	Continuing	Continuing
IRST - Development Support	WR	FRC Southeast : Jacksonville, FL	3.851	0.972	Dec 2013	1.038	Dec 2014	0.503	Dec 2015	-		0.503	Continuing	Continuing	Continuing
MSI PH II Development Support	Various	NAWCWD : China Lake, CA	13.141	5.111	Dec 2013	-		-		-		-	-	18.252	-
MSI PH II Development Support	SS/IDIQ	Boeing : St. Louis, MO	0.000	0.918	Dec 2013	-		-		-		-	-	0.918	0.918
AGCAS/ATAWS Development Support	WR	NAWCWD : China Lake, CA	0.761	3.120	Dec 2013	-		-		-		-	-	3.881	-
MSI PH III Development Support - Sensor Integration Counter-Digital Radio Frequency Memory	WR	NAWCWD : China Lake, CA	5.208	5.534	Dec 2013	-		-		-		-	-	10.742	-
MSI PH III Development Support - Sensor Integration Counter-Digital Radio Frequency Memory	SS/IDIQ	Boeing : St. Louis, MO	2.645	7.049	Dec 2013	-		-		-		-	-	9.694	9.694
Multi-System Integration Development Support	WR	NAWCAD : Pax River, MD	0.000	-		3.250	Dec 2014	2.113	Dec 2015	-		2.113	Continuing	Continuing	Continuing
Multi-System Integration Development Support	WR	NAWCWD : China Lake, CA	0.000	-		3.775	Dec 2014	17.733	Dec 2015	-		17.733	Continuing	Continuing	Continuing
Multi-System Integration Development Support	SS/IDIQ	Boeing : St. Louis, MO	0.000	-		4.500	Dec 2014	11.620	Dec 2015	-		11.620	-	16.120	16.120
Multi-System Integration Development Support	WR	NSMA : Arlington, VA	0.000	-		2.300	Mar 2015	2.300	Mar 2016	-		2.300	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 1662 / *F/A-18 Improvement*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Flight Plan/System Configuration Set Development & Integration	WR	NAWCAD : Pax River, MD	0.000	2.165	Nov 2014	-		0.898	Nov 2015	-		0.898	Continuing	Continuing	Continuing
SDB II / JMM BRU - Development Support	WR	NAWCAD : Pax River, MD	0.000	1.600	Mar 2014	-		-		-		-	-	1.600	-
SDB II / JMM BRU - Development Support	WR	NAWCWD : China Lake, CA	0.000	1.424	Mar 2014	-		-		-		-	-	1.424	-
SDB II / JMM BRU - Software Development Support	WR	NAWCWD : China Lake, CA	0.000	1.000	Mar 2014	-		-		-		-	-	1.000	-
SDB II / JMM BRU - Contractor Development Support	SS/IDIQ	Raytheon : Tucson, AZ	0.000	1.000	May 2014	-		-		-		-	-	1.000	1.000
Obsolescence Redesign	Various	Various : Various	0.000	0.100	Aug 2014	0.100	Jun 2015	0.700	Jun 2016	-		0.700	Continuing	Continuing	Continuing
Prior Year Support costs no longer funded in FYDP	Various	Various : Various	2,974.084	-		-		-		-		-	-	2,974.084	-
		Subtotal	3,019.201	34.700		27.893		40.376		-		40.376	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
IRST - Developmental Test & Evaluation (DT&E)	WR	NAWCAD : Pax River, MD	5.986	9.557	Dec 2013	1.090	Dec 2014	1.100	Dec 2015	-		1.100	Continuing	Continuing	Continuing
IRST - DT&E	WR	NAWCWD : China Lake, CA	2.303	10.935	Dec 2013	6.262	Dec 2014	3.500	Dec 2015	-		3.500	Continuing	Continuing	Continuing
IRST - Operational Test & Evaluation (OT&E)	WR	OPTEVFOR : VX-9	0.683	0.317	Dec 2013	4.817	Dec 2014	4.940	Dec 2015	-		4.940	Continuing	Continuing	Continuing
MSI PH II OT&E	WR	OPTEVFOR : Norfolk, VA	0.593	4.151	Dec 2013	-		-		-		-	-	4.744	-
Multi-System Integration	WR	OPTEVFOR : Norfolk, VA	0.000	-		2.250	Dec 2014	0.800	Dec 2015	-		0.800	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SDB II / JMM BRU - DT&E	WR	NAWCAD : Pax River, MD	0.000	1.000	Mar 2014	-		-		-		-	-	1.000	-
SDB II / JMM BRU - DT&E	WR	NAWCWD : China Lake, CA	0.000	0.675	Mar 2014	-		-		-		-	-	0.675	-
Flight Plan/SCS Test & Evaluation	WR	NAWCAD : Pax River, MD	0.000	-		-		1.000	Nov 2015	-		1.000	-	1.000	-
AIM-120 Test Assets	MIPR	USAF : Eglin AFB, FL	0.000	2.000	Dec 2014	-		2.000	Dec 2015	-		2.000	Continuing	Continuing	Continuing
Prior Year T&E costs no longer funded in FYDP	Various	Various : Various	128.916	-		-		-		-		-	-	128.916	-
		Subtotal	138.481	28.635		14.419		13.340		-		13.340	-	-	-

Remarks

Test Assets (AIM-120, SDB II and JMM BRU) procured as live fire test assets in support of F/A-18E/F Improvements programs (IRST, MSI (SCS block builds)) and weapons integration efforts specific to the F/A-18.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Mgmt Support - MISC	Various	NAWCAD : Pax River, MD	9.893	2.212	Dec 2013	2.100	Dec 2014	2.100	Dec 2015	-		2.100	Continuing	Continuing	Continuing
Seaport CSS - Program Management Support	C/CPFF	Wyle Lab : Pax River, MD	14.186	3.696	Dec 2013	3.442	Dec 2014	3.442	Dec 2015	-		3.442	-	24.766	24.766
Travel	Various	NAVAIR : Pax River, MD	4.473	0.450	Nov 2013	0.250	Nov 2014	0.250	Nov 2015	-		0.250	Continuing	Continuing	Continuing
Government Engineering Support	Various	Various : Various	5.730	2.472	Dec 2013	-		-		-		-	Continuing	Continuing	Continuing
Test Wing Maintenance Conversion	WR	NAWCAD : Pax River, MD	23.587	3.108	Dec 2013	3.469	Dec 2014	3.423	Dec 2015	-		3.423	Continuing	Continuing	Continuing
Test Wing Maintenance Conversion	WR	NAWCWD : China Lake, CA	24.587	3.035	Dec 2013	3.469	Dec 2014	3.423	Dec 2015	-		3.423	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 1662 / *F/A-18 Improvement*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Flight Plan / System Configuration Set Development & Integration	WR	NAWCAD : Pax River, MD	0.000	2.000	Dec 2013	2.150	Dec 2014	2.200	Dec 2015	-		2.200	Continuing	Continuing	Continuing
Flight Plan / System Configuration Set Development & Integration	WR	NAWCWD : China Lake, CA	0.000	2.000	Dec 2013	2.150	Dec 2014	2.200	Dec 2015	-		2.200	Continuing	Continuing	Continuing
Prior Year Mgmt costs no longer funded in FYDP	Various	Various : Various	56.784	-		-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	139.240	18.973		17.030		17.038		-		17.038	-	-	-

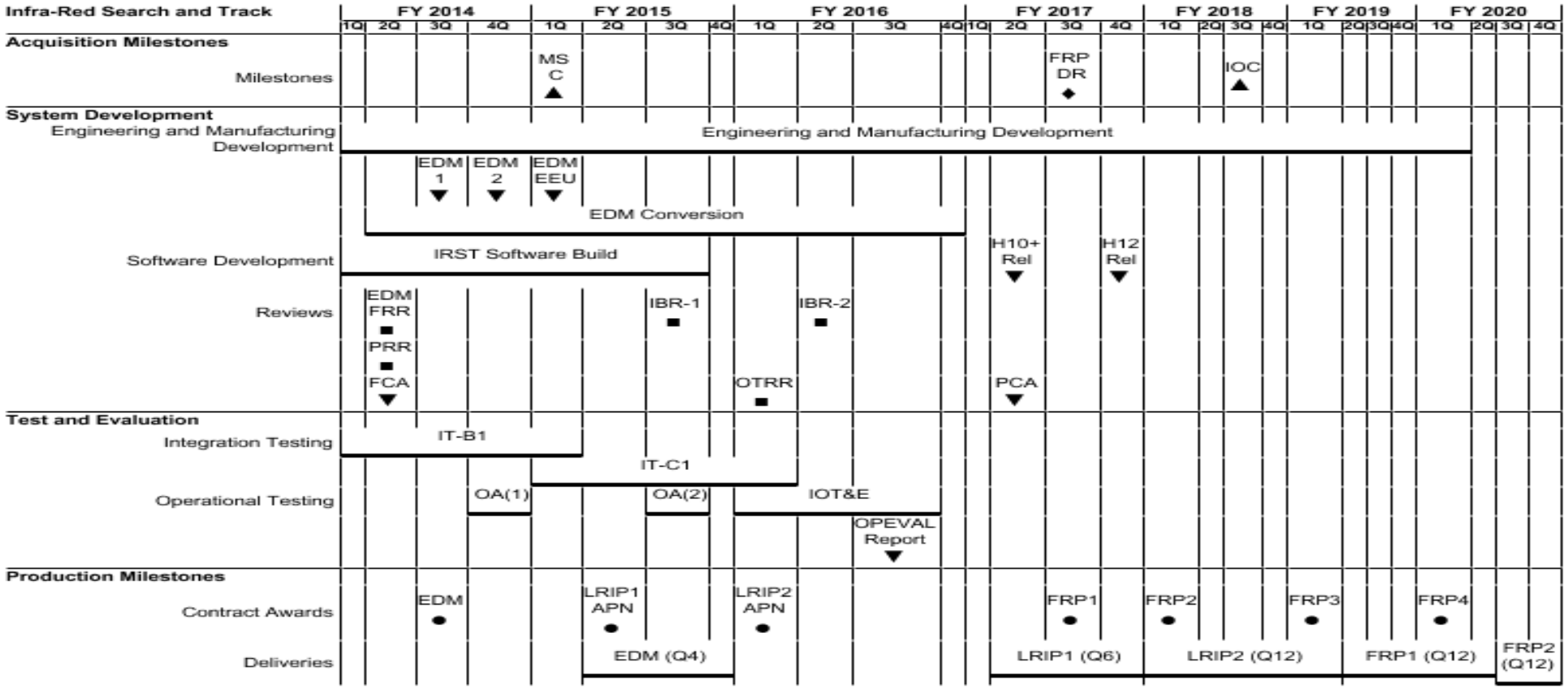
Remarks

In FY14 the Flight Plan Engineering efforts at Pax River and China Lake rolled up under the Flight Plan / System Configuration Set Development & Integration program.

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	4,006.957	107.472		83.152		118.243		-		118.243	-	-	-

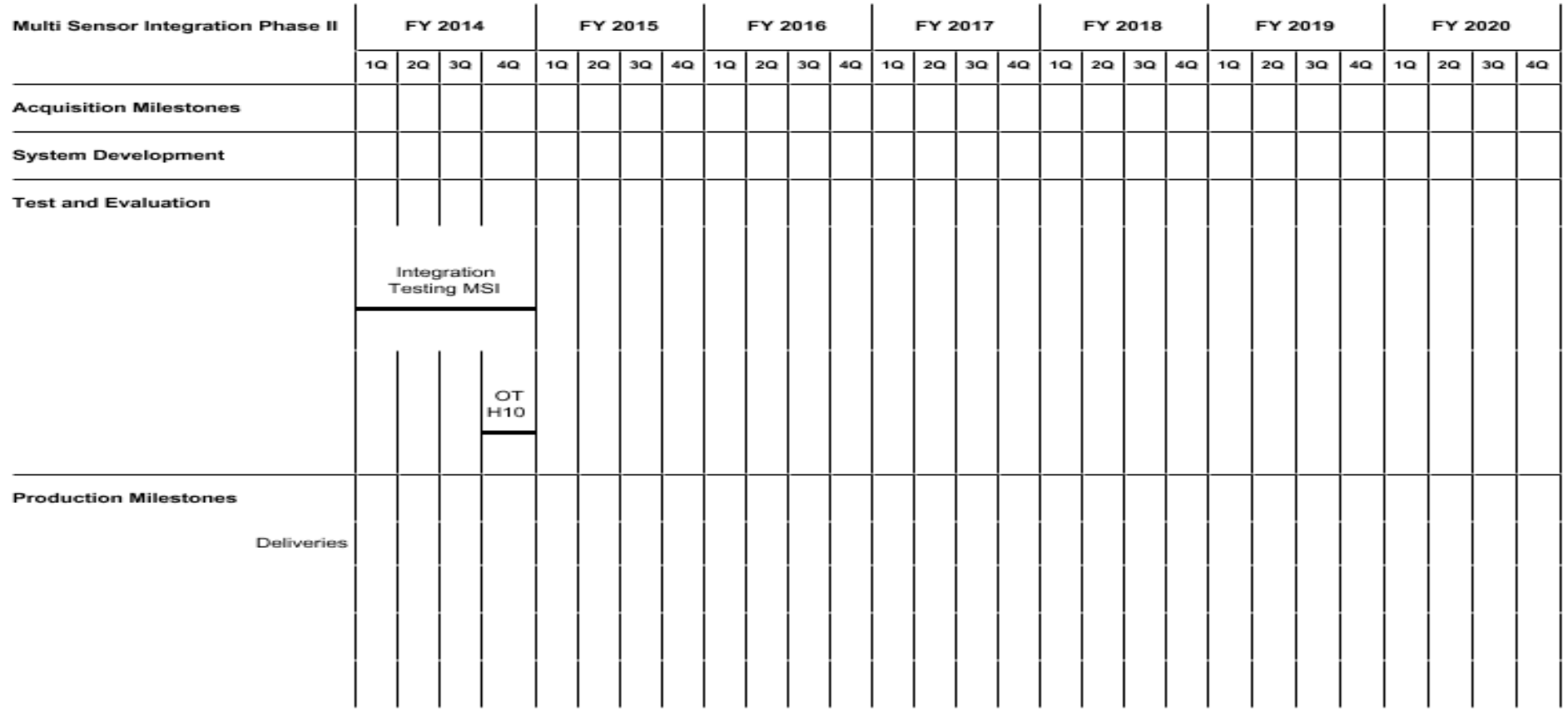
Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*



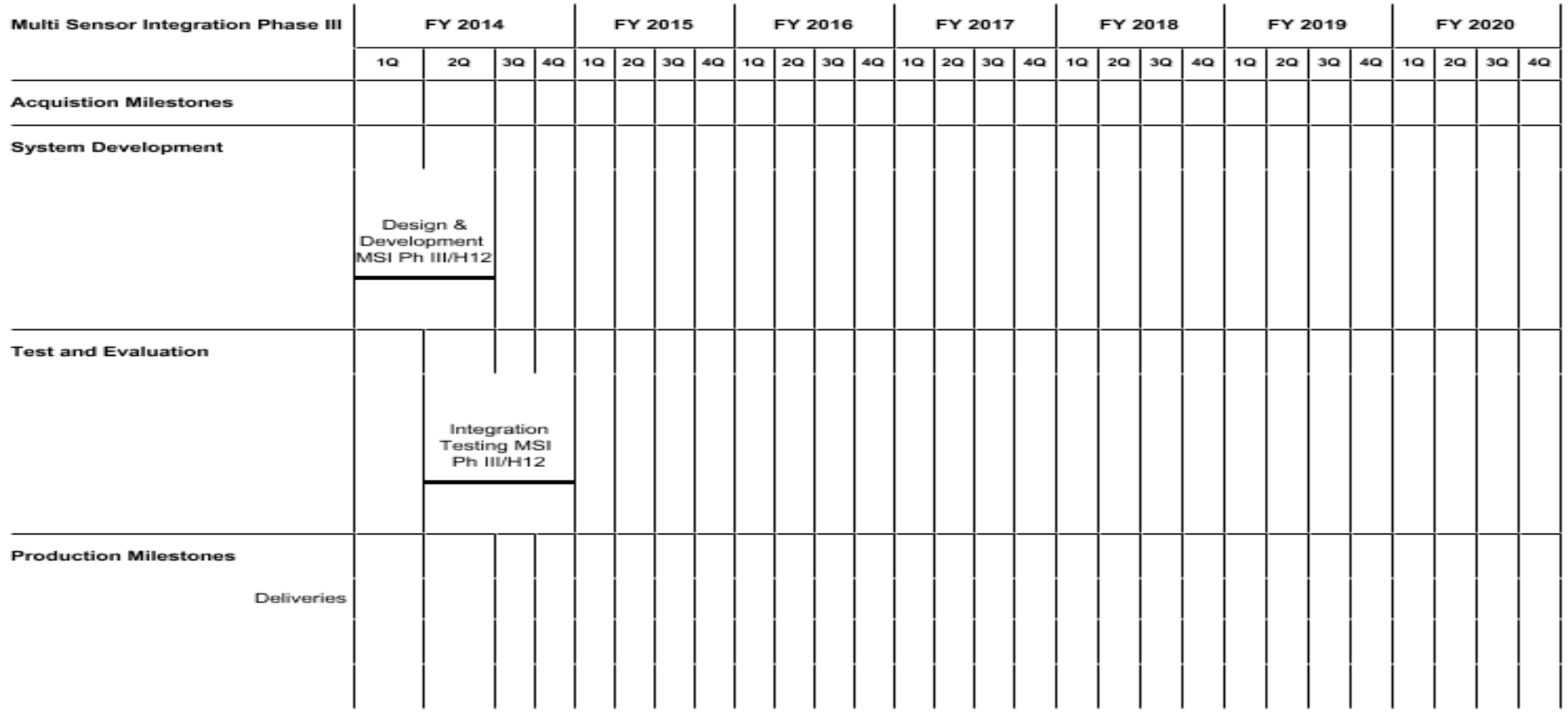
2016PB - 0204136N - 1662

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*



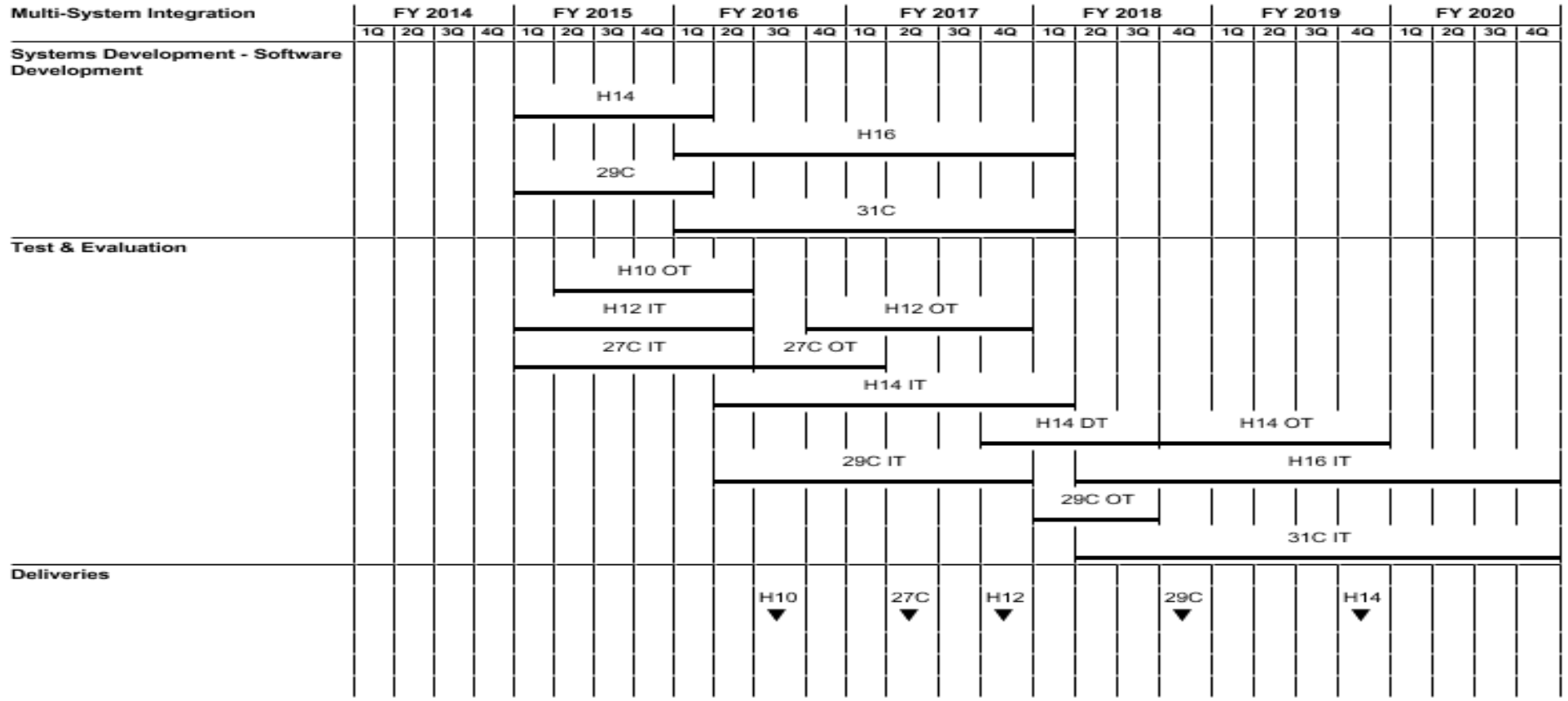
2016PB - 0204136N - 1662

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*



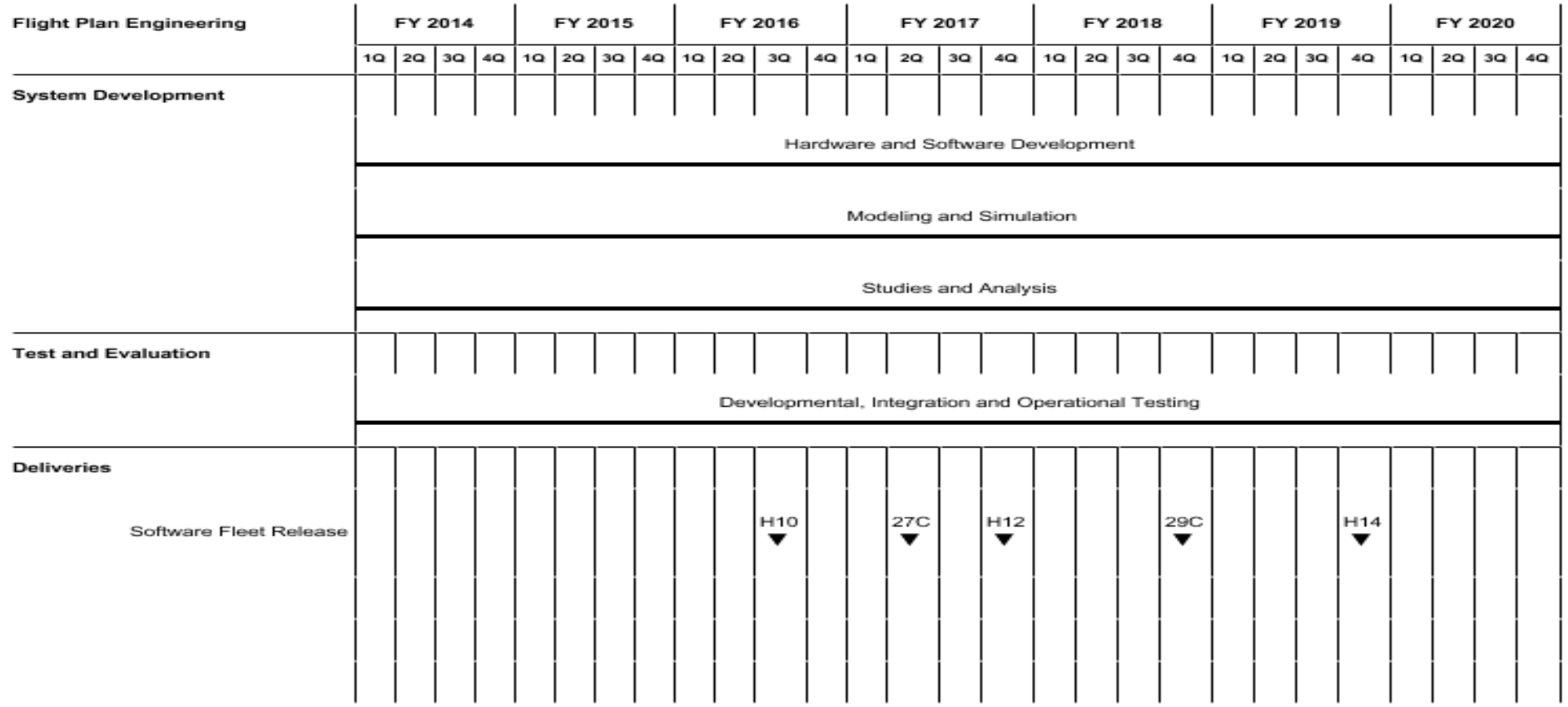
2016PB - 0204136N - 1662 Multi Sensor Integration Phase III has been programmatically renamed as Multi-System Integration beginning in FY 2015.

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*



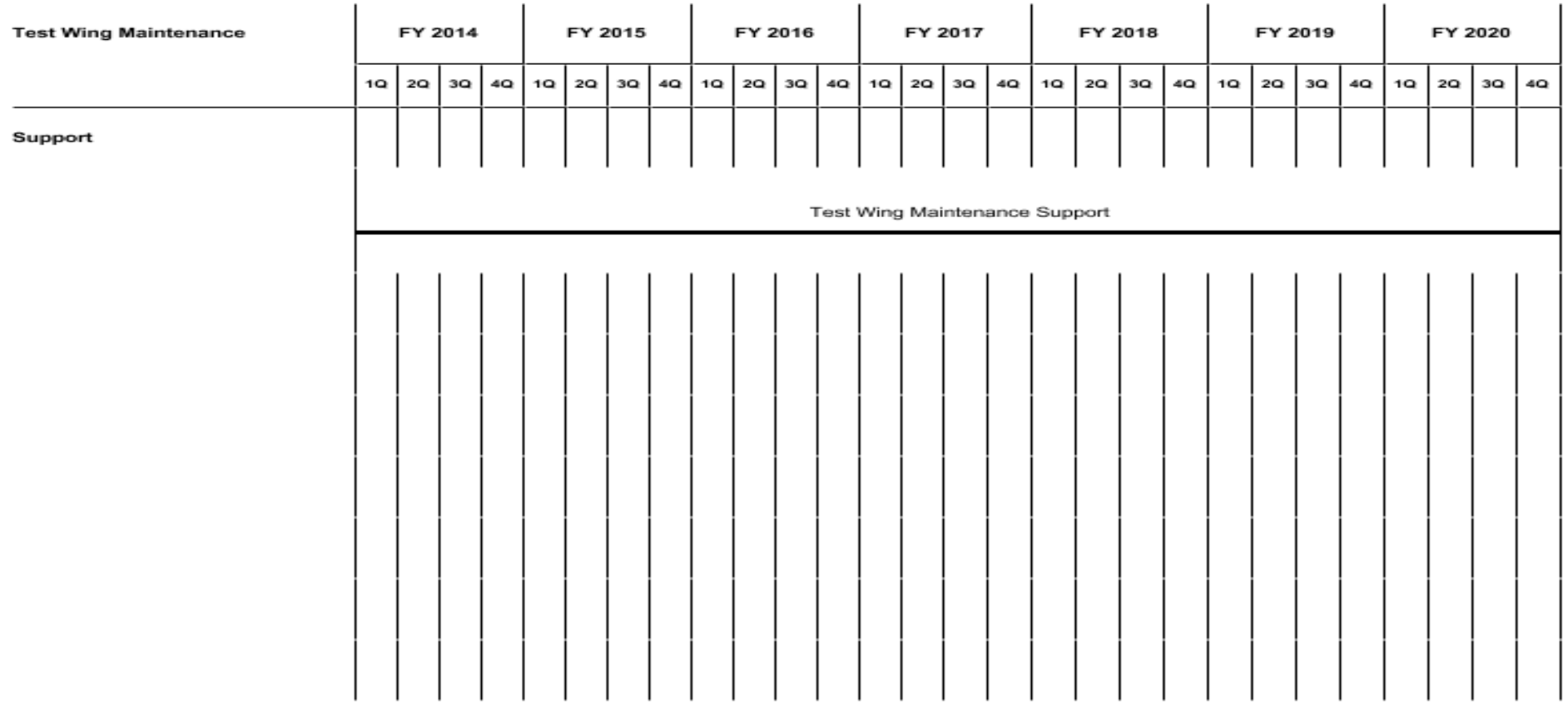
2016PB - 0204136N - 1662 Multi Sensor Integration Phase III has been programmatically renamed as Multi-System Integration beginning in FY 2015.

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*



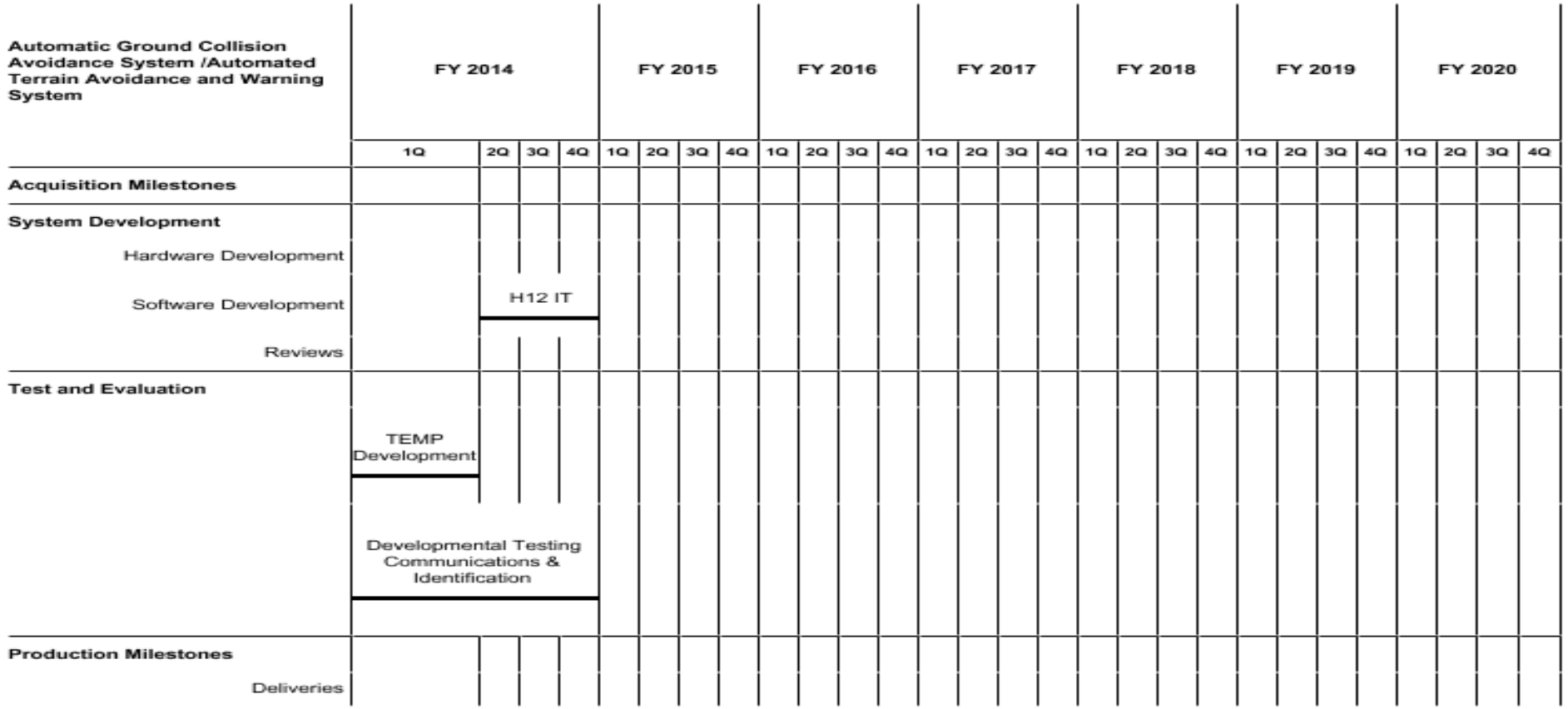
2016PB - 0204136N - 1662

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*



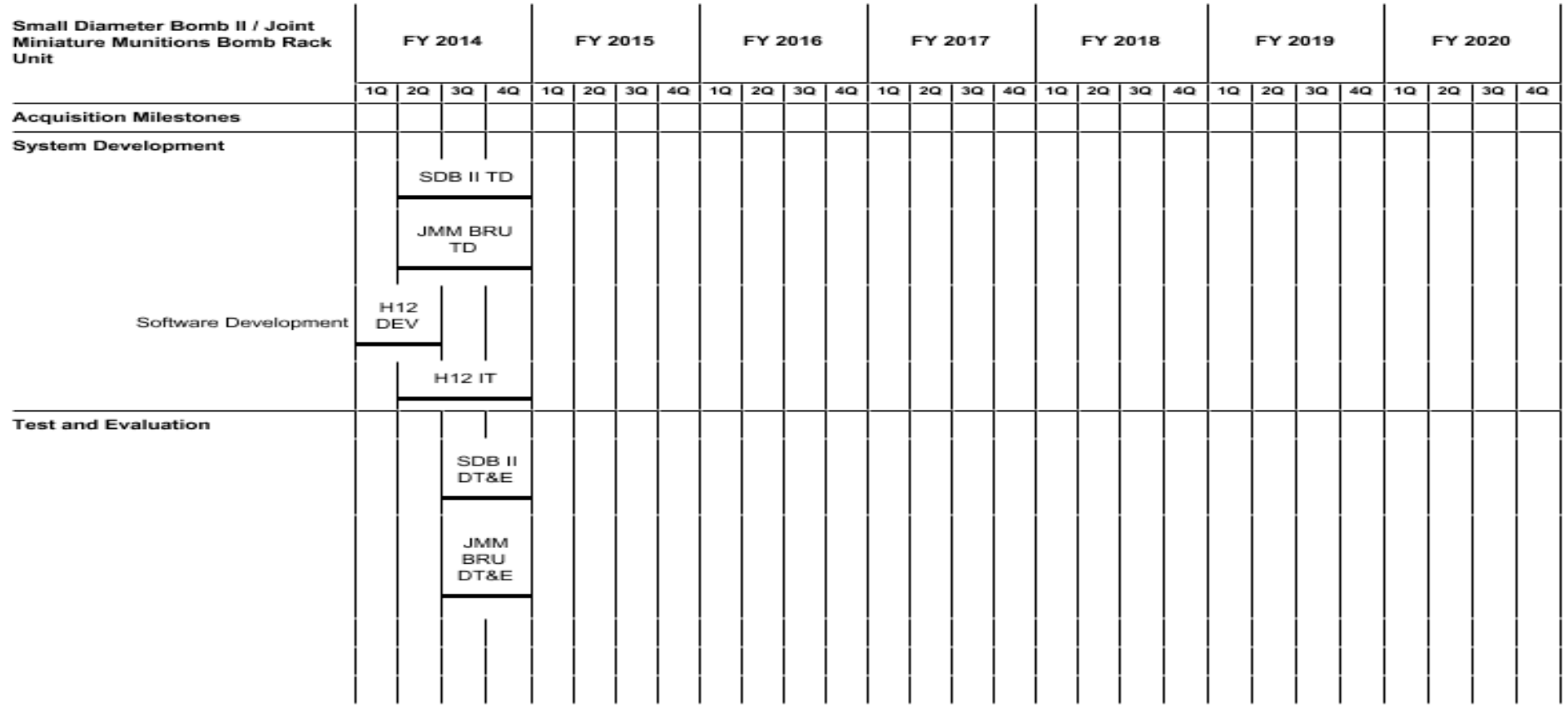
2016PB - 0204136N - 1662

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*



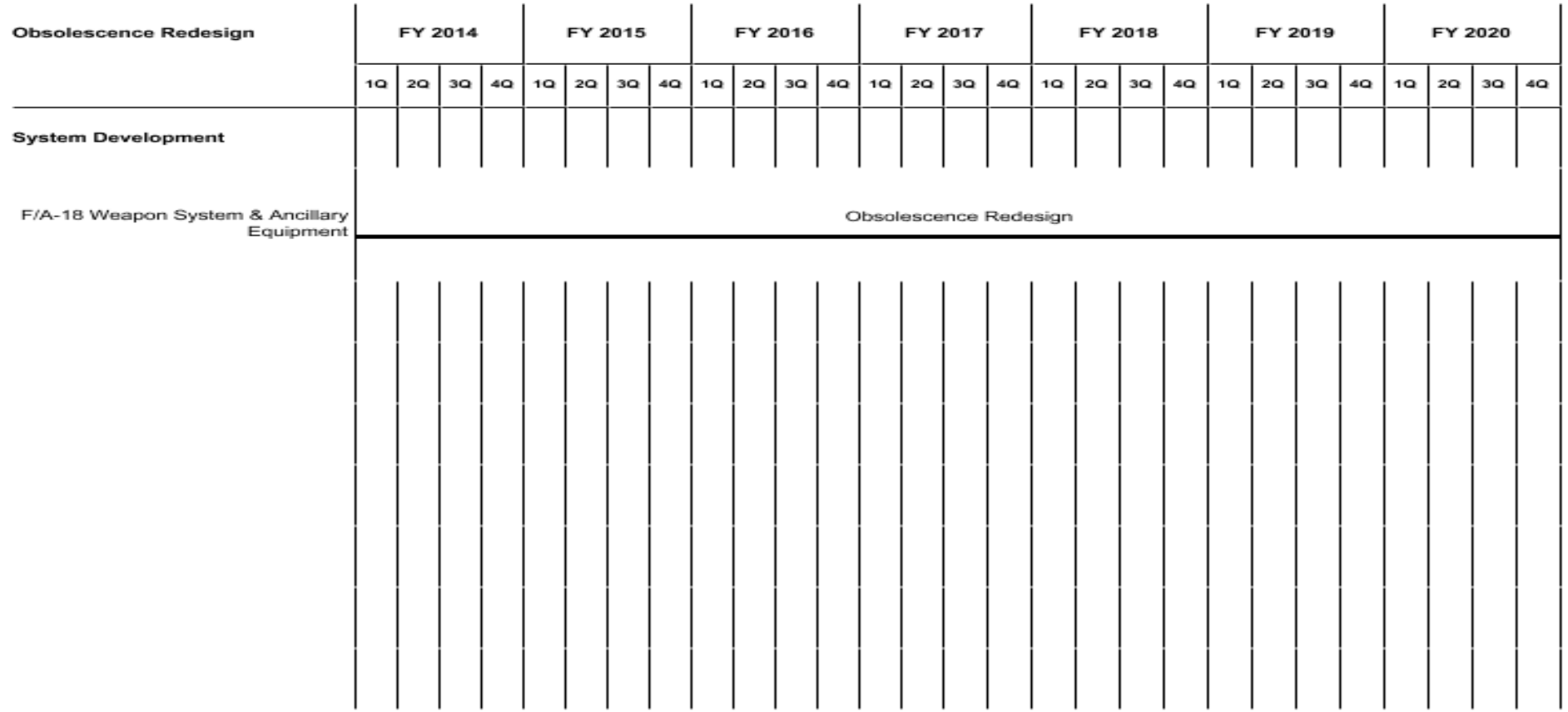
2016PB - 0204136N - 1662

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*



2016PB - 0204136N - 1662

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*



2016PB - 0204136N - 1662

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Infra-Red Search and Track				
Acquisition Milestones: Milestones: Full Rate Production Decision Review (FRP DR)	3	2017	3	2017
Acquisition Milestones: Milestones: Milestone C (MS C)	1	2015	1	2015
Acquisition Milestones: Milestones: Initial Operational Capability (IOC)	3	2018	3	2018
System Development: Engineering and Manufacturing Development: Engineering and Manufacturing Development	1	2014	1	2020
System Development: Engineering and Manufacturing Development: Eng Dev Model (EDM) IRST Delivery - Lab/IT&E (Unit 1) Block 1	3	2014	3	2014
System Development: Engineering and Manufacturing Development: Eng Dev Model (EDM) IRST Delivery - Lab/IT&E (Unit 2) Block 1	4	2014	4	2014
System Development: Engineering and Manufacturing Development: Eng Dev Model (EDM) IRST Delivery - (Environmental Evaluation Unit-EEU)	1	2015	1	2015
System Development: Engineering and Manufacturing Development: EDM Conversion	2	2014	4	2016
System Development: Software Development: H10+ Fleet Release	2	2017	2	2017
System Development: Software Development: H12 Fleet Release	4	2017	4	2017
System Development: Software Development: IRST Software Build	1	2014	3	2015
System Development: Reviews: Integrated Baseline Review (IBR) - 1	3	2015	3	2015
System Development: Reviews: Integrated Baseline Review (IBR) - 2	2	2016	2	2016
System Development: Reviews: Fleet Readiness Review Engineering Development Model (EDM FRR)	2	2014	2	2014
System Development: Reviews: Preproduction Readiness Review (PRR)	2	2014	2	2014
System Development: Reviews: Functional Configuration Audit (FCA)	2	2014	2	2014
System Development: Reviews: Operational Testing Readiness Review (OTRR)	1	2016	1	2016
System Development: Reviews: Physical Configuration Audit (PCA)	2	2017	2	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test and Evaluation: Integration Testing: Integration Testing (IT-B1)	1	2014	1	2015
Test and Evaluation: Integration Testing: Integration Testing (IT-C1)	1	2015	1	2016
Test and Evaluation: Operational Testing: Operational Assessment (OA) 1	4	2014	4	2014
Test and Evaluation: Operational Testing: Operational Assessment (OA) 2	3	2015	3	2015
Test and Evaluation: Operational Testing: Integrated Operational Test & Evaluation (IOT&E)	1	2016	3	2016
Test and Evaluation: Operational Testing: OPEVAL Report	3	2016	3	2016
Production Milestones: Contract Awards: EDM	3	2014	3	2014
Production Milestones: Contract Awards: LRIP 1 APN	2	2015	2	2015
Production Milestones: Contract Awards: LRIP 2 APN	1	2016	1	2016
Production Milestones: Contract Awards: FRP I Start	3	2017	3	2017
Production Milestones: Contract Awards: FRP 2 Start	1	2018	1	2018
Production Milestones: Contract Awards: FRP 3 Start	1	2019	1	2019
Production Milestones: Contract Awards: FRP 4 Start	1	2020	1	2020
Production Milestones: Deliveries: Productionized EDM (Qty 4)	2	2015	4	2015
Production Milestones: Deliveries: LRIP 1 (Lot 1 - Qty 6)	2	2017	4	2017
Production Milestones: Deliveries: LRIP 2 (Lot 2 - Qty 12)	1	2018	1	2019
Production Milestones: Deliveries: FRP 1 (Lot 3 - Qty 12)	2	2019	2	2020
Production Milestones: Deliveries: FRP 2 (Lot 4 - Qty 12)	3	2020	4	2020
Multi Sensor Integration Phase II				
Test and Evaluation: Integration Testing MSI	1	2014	4	2014
Test and Evaluation: Operational Testing H10	4	2014	4	2014
Multi Sensor Integration Phase III				
System Development: Design & Development MSI Ph III/H12	1	2014	2	2014
Test and Evaluation: Integration Testing MSI Ph III/H12	2	2014	4	2014
Multi-System Integration				

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Systems Development - Software Development: H14 Software Development	1	2015	1	2016
Systems Development - Software Development: H16 Software Development	1	2016	1	2018
Systems Development - Software Development: 29C Software Development	1	2015	1	2016
Systems Development - Software Development: 31C Software Development	1	2016	1	2018
Test & Evaluation: H10 Operational Testing	2	2015	2	2016
Test & Evaluation: H12 Integration Testing	1	2015	2	2016
Test & Evaluation: H12 Operational Testing	4	2016	4	2017
Test & Evaluation: 27C Integration Testing	1	2015	2	2016
Test & Evaluation: 27C Operational Testing	3	2016	1	2017
Test & Evaluation: H14 Integration Testing	2	2016	1	2018
Test & Evaluation: H14 Developmental Testing	4	2017	3	2018
Test & Evaluation: H14 Operational Testing	4	2018	4	2019
Test & Evaluation: H16 Integration Testing	2	2018	4	2020
Test & Evaluation: 29C Integration Testing	2	2016	4	2017
Test & Evaluation: 29C Operational Testing	1	2018	3	2018
Test & Evaluation: 31C Integration Testing	2	2018	4	2020
Deliveries: H10 Fleet Release	3	2016	3	2016
Deliveries: H12 Fleet Release	4	2017	4	2017
Deliveries: 27C Fleet Release	2	2017	2	2017
Deliveries: 29C Fleet Release	4	2018	4	2018
Deliveries: H14 Fleet Release	4	2019	4	2019
Flight Plan Engineering				
System Development: Hardware and Software Development	1	2014	4	2020
System Development: Modeling and Simulation	1	2014	4	2020
System Development: Studies and Analysis	1	2014	4	2020
Test and Evaluation: Developmental, Integration and Operational Testing	1	2014	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Deliveries: Software Fleet Release: H10 Fleet Release	3	2016	3	2016
Deliveries: Software Fleet Release: H12 Fleet Release	4	2017	4	2017
Deliveries: Software Fleet Release: 27C Fleet Release	2	2017	2	2017
Deliveries: Software Fleet Release: 29C Fleet Release	4	2018	4	2018
Deliveries: Software Fleet Release: H14 Fleet Release	4	2019	4	2019
Test Wing Maintenance				
Support: Test Wing Maintenance Support	1	2014	4	2020
Automatic Ground Collision Avoidance System /Automated Terrain Avoidance and Warning System				
System Development: Software Development: H12 Integration Testing	2	2014	4	2014
Test and Evaluation: TEMP Development	1	2014	1	2014
Test and Evaluation: Developmental Testing Communications & Identification	1	2014	4	2014
Small Diameter Bomb II / Joint Miniature Munitions Bomb Rack Unit				
System Development: SDB II Tech Development	2	2014	4	2014
System Development: JMM BRU Tech Development	2	2014	4	2014
System Development: Software Development: H12 Software Development	1	2014	2	2014
System Development: Software Development: H12 Integration Testing	2	2014	4	2014
Test and Evaluation: SDB II Integration DT&E	3	2014	4	2014
Test and Evaluation: JMM BRU Integration DT&E	3	2014	4	2014
Obsolescence Redesign				
System Development: F/A-18 Weapon System & Ancillary Equipment: Obsolescence Redesign Development & Testing	1	2014	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 2065 / *F/A-18 Radar Upgrade*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
2065: *F/A-18 Radar Upgrade*	705.934	3.015	3.064	15.022	-	15.022	-	-	-	-	-	727.035
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

F/A-18 Radio Detection and Ranging (RADAR) Upgrade: The F/A-18 RADAR Upgrade, Active Electronically Scanned Array (AESA) development program, which began in FY 1999, is the last of three pre-planned upgrades to the F/A-18 Type/Model/Series RADAR. The AESA system corrects operational test deficiencies noted in the AN/APG-73. It provides multi-target tracking, Synthetic Aperture RADAR (SAR) imagery, SAR Target Location Error (TLE), and improved spotlight map resolution. In addition, it provides greater lethality than previous F/A-18 RADARs by allowing full tactical support of existing and planned air-to-air (A/A) and air-to-ground (A/G) weapons and it significantly increases A/A and A/G detection and tracking ranges. The AESA system provides greater survivability through self-protection and standoff jamming capabilities, while its greater range allows for reduced detection by enemy RADAR. This budget continues spiral capability development of AESA with increased efforts to address Phase II Operational Requirements Document requirements such as Counter-Electronic Attack 1 (CEA 1) against multiple Radio Frequency Emitters, AESA Multi-Jammer Electronic Protection, Precision TLE Improvement, Monopulse and 5th/6th Channel development and Air Combat Maneuvering/Short Range Search and Track development and includes upgrades to RADAR Instrumentation, test and evaluation assets and threat assets, and upgraded modeling and simulation of both clean and Electronic Attack threat environments. Budget also supports development and testing of design modifications to address obsolescence issues with APG-65, APG-73 and APG-79 RADAR systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Distributed Targeting - CEA 1 Software Development, Developmental Testing, Operational Testing, & Integration	2.955	3.004	14.954	-	14.954
Articles:	-	-	-	-	-
Description: Funding being utilized to support software (SW) capabilities development, integration and associated testing.					
FY 2014 Accomplishments: Continue hardware (HW) and SW development, integration and testing of instrumentation required to support AESA RADAR spiral capability upgrades.					
FY 2015 Plans: Continue HW and SW development, integration and testing of instrumentation required to support AESA RADAR spiral capability upgrades. Funds program management and engineering support required for the APG-65/73-79 RADAR systems.					
FY 2016 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2065 / *F/A-18 Radar Upgrade*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Continue SW development, integration and testing of instrumentation required to support AESA RADAR spiral capability upgrades. Funds program management and engineering support required for the APG-65/73-79 RADAR systems. ***FY 2016 OCO Plans:*** N/A					
Title: F/A-18 RADAR Obsolescence Redesign	0.060	0.060	0.068	-	0.068
Articles:	-	-	-	-	-
Description: Develop and test design modifications to address obsolescence issues. ***FY 2014 Accomplishments:*** Develop and test design modifications to hardware components and software systems in response to F/A-18 Radio Detection and Ranging (RADAR) system obsolescence issues. ***FY 2015 Plans:*** Develop and test design modifications to hardware components and software systems in response to F/A-18 RADAR system obsolescence issues. ***FY 2016 Base Plans:*** Develop and test design modifications to hardware components and software systems in response to F/A-18 RADAR system obsolescence issues. ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	3.015	3.064	15.022	-	15.022

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• APN/0145: *F/A-18E/F*	180.056	-	-	-	-	-	-	-	-	-	44,435.723
• APN/0145C: *F/A-18E/F AP*	27.355	-	-	-	-	-	-	-	-	-	1,641.575
• APN/0143: *EA-18G*	1,839.918	1,503.547	-	-	-	-	-	-	-	-	15,086.710
• APN/05250: *F-18 Series Mod (OSIP 002-07)*	186.941	79.222	102.496	-	102.496	237.154	243.756	229.280	161.537	159.960	2,031.428

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

The Active Electronically Scanned Array program continues developmental efforts following a successful Full Rate Production milestone decision, after completing a two-phase Acquisition approach during the FY1999 through FY2007 timeframe. This strategy continues utilization of reform initiatives such as: early partnering with industry; leveraging industry investment; optimizing use of Commercial Off-The Shelf software and Non-Developmental Item; using Cost as an Independent Variable; and Electronic Data Deliverables. Basic Ordering Agreement orders for Request for Proposal developments are in place for Boeing, the airframe prime manufacturer/ integrator, and Raytheon, the Radio Detection and Ranging manufacturer, for focused risk reduction and sustainment of prior developmental activities.

E. Performance Metrics

Execute the system engineering process for software delivery and support the design and development of Electronic Protection, air to air, and air to ground capabilities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 2065 / *F/A-18 Radar Upgrade*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCAD : Pax River, MD	2.983	0.929	Nov 2013	0.984	Nov 2014	1.004	Nov 2015	-		1.004	4.000	9.900	-
CEA 1 - Development/ Integration Counter Electronic Attack #1 (CEA 1)	Various	NSMA : Arlington, VA	71.021	-		-		11.329	Dec 2015	-		11.329	31.700	114.050	-
Prior Year Prod Dev cost no longer funded in FYDP	Various	Various : Various	468.195	-		-		-		-		-	-	468.195	-
		Subtotal	542.199	0.929		0.984		12.333		-		12.333	35.700	592.145	-

Remarks

FY2016 funding increased in support of Integrated Capability Package (ICP)-3 Counter-Electronic Attack (CEA)development in support of Combatant Commander requirements.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development (Instrumentation)	WR	NAWCWD : China Lake, CA	38.645	0.386	Dec 2013	0.352	Dec 2014	0.500	Dec 2015	-		0.500	2.000	41.883	-
Obsolescence Redesign	Various	Various : Various	0.000	0.060	Aug 2014	0.060	Jun 2015	0.068	Mar 2016	-		0.068	1.200	1.388	-
Prior Year Support cost no longer funded in the FYDP	Various	Various : Various	2.027	-		-		-		-		-	-	2.027	-
		Subtotal	40.672	0.446		0.412		0.568		-		0.568	3.200	45.298	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
H12 Operational Test	WR	NAWCWD : China Lake, CA	0.000	-		-		0.300	Dec 2015	-		0.300	0.300	0.600	-
Prior Year T&E cost no longer funded in FYDP	Various	Various : Various	110.808	-		-		-		-		-	-	110.808	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2065 / *F/A-18 Radar Upgrade*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	110.808	-		-		0.300		-		0.300	0.300	111.408	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support (Seaport CSS)	C/CPFF	Wyle : Pax River, MD	6.966	0.534	Dec 2013	0.543	Dec 2014	0.543	Dec 2015	-		0.543	-	8.586	8.586
Contractor Engineering Support	Various	Various : Various	2.370	0.351	Nov 2013	0.357	Nov 2014	0.500	Dec 2015	-		0.500	-	3.578	-
Program Management Support	WR	NAWCAD : Pax River, MD	1.679	0.710	Nov 2013	0.723	Nov 2014	0.723	Dec 2015	-		0.723	0.800	4.635	-
Travel	Various	NAVAIR : Pax River, MD	1.240	0.045	Oct 2013	0.045	Oct 2014	0.055	Nov 2015	-		0.055	-	1.385	-
		Subtotal	12.255	1.640		1.668		1.821		-		1.821	0.800	18.184	-

	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	705.934	3.015		3.064		15.022		-		15.022	40.000	767.035	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2065 / *F/A-18 Radar Upgrade*

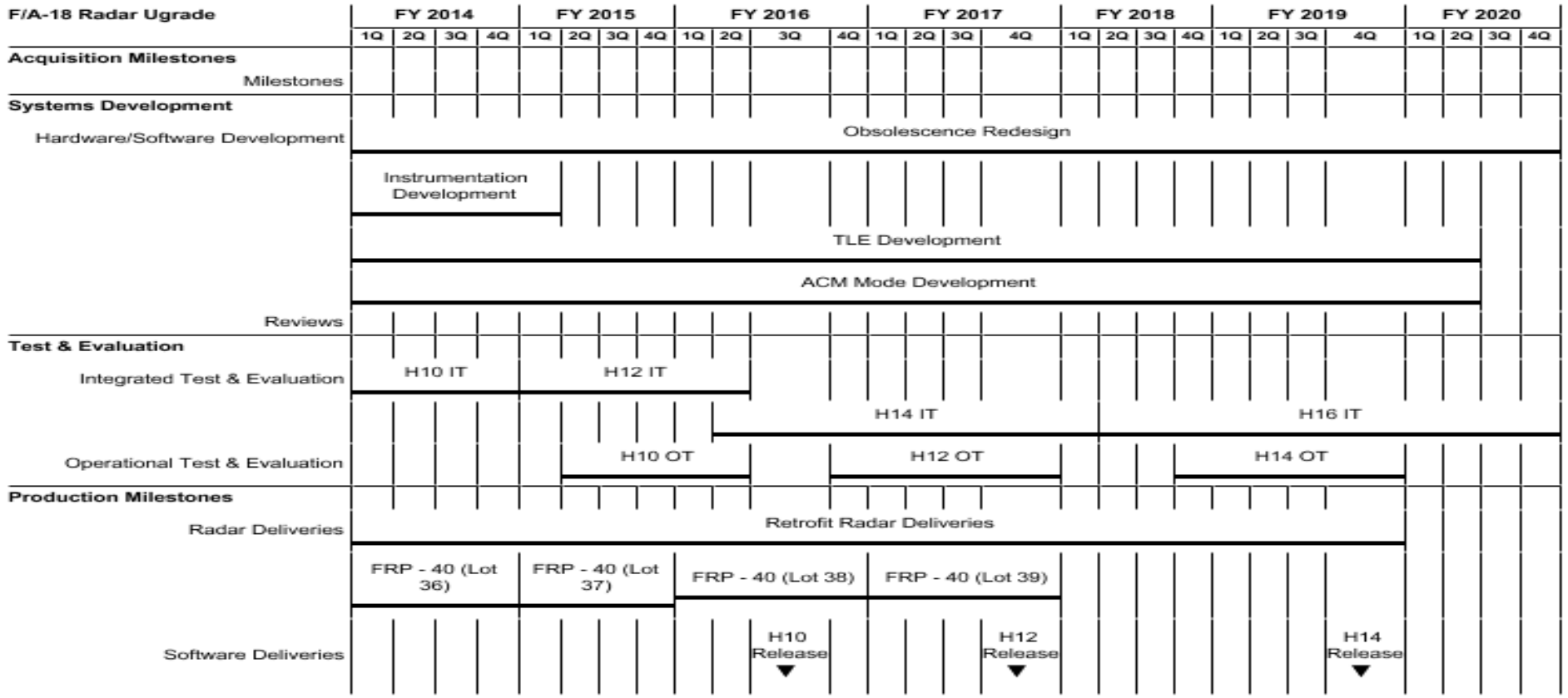

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2065 / *F/A-18 Radar Upgrade*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
F/A-18 Radar Ugrade				
Systems Development: Hardware/Software Development: Obsolescence Redesign Development & Testing	1	2014	4	2020
Systems Development: Hardware/Software Development: Instrumentation Development	1	2014	1	2015
Systems Development: Hardware/Software Development: TLE Development	1	2014	2	2020
Systems Development: Hardware/Software Development: ACM Mode Development	1	2014	2	2020
Test & Evaluation: Integrated Test & Evaluation: H10 Integration Testing	1	2014	4	2014
Test & Evaluation: Integrated Test & Evaluation: H12 Integration Testing	1	2015	2	2016
Test & Evaluation: Integrated Test & Evaluation: H14 Integration Testing	2	2016	1	2018
Test & Evaluation: Integrated Test & Evaluation: H16 Integration Testing	2	2018	4	2020
Test & Evaluation: Operational Test & Evaluation: H10 Operational Testing	2	2015	2	2016
Test & Evaluation: Operational Test & Evaluation: H12 Operational Testing	4	2016	4	2017
Test & Evaluation: Operational Test & Evaluation: H14 Operational Testing	4	2018	4	2019
Production Milestones: Radar Deliveries: Retrofit Radar Deliveries	1	2014	4	2019
Production Milestones: Radar Deliveries: FRP Deliveries B - 40 (Lot 36)	1	2014	4	2014
Production Milestones: Radar Deliveries: FRP Deliveries B - 40 (Lot 37)	1	2015	4	2015
Production Milestones: Radar Deliveries: FRP Deliveries B - 40 (Lot 38)	1	2016	4	2016
Production Milestones: Radar Deliveries: FRP Deliveries B - 40 (Lot 39)	1	2017	4	2017
Production Milestones: Software Deliveries: H10 FLEET RELEASE	3	2016	3	2016
Production Milestones: Software Deliveries: H12 FLEET RELEASE	4	2017	4	2017
Production Milestones: Software Deliveries: H14 FLEET RELEASE	4	2019	4	2019