Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy											Date: March 2019	
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 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
Total Program Element	5,187.482	133.544	204.886	213.715	-	213.715	169.009	127.070	100.401	94.709	Continuing	Continuing
1662: *F/A-18 Improvement*	4,356.010	68.166	102.938	117.011	-	117.011	130.334	118.228	91.397	85.524	Continuing	Continuing
2065: *F/A-18 Radar Upgrade*	737.378	7.838	7.002	8.706	-	8.706	8.674	8.842	9.004	9.185	Continuing	Continuing
2069: *F/A-18 Infrared Search and Track (IRST)*	94.094	0.078	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	94.172
2071: *F/A-18 Block III*	0.000	57.462	83.146	87.998	-	87.998	30.001	0.000	0.000	0.000	0.000	258.607
9999: *Congressional Adds*	0.000	0.000	11.800	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	11.800
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** P510												

A. Mission Description and Budget Item Justification

The F/A-18 is required to perform multiple missions. The 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 to maintain the platform's 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/II, and development of a fused picture between these sensors. Continued advanced development engineering for improvements in reliability and maintainability is required to ensure maximum benefit is achieved through reduced cost of ownership and provides enhanced availability. Capabilities of the F/A-18 weapon system and ancillary equipment can be upgraded to accommodate and incorporate new or enhanced weapons and advances in technology to respond effectively to emerging future threats. Rapid technology insertion upgrades to F/A-18 E/F systems and F/A-18 A-D systems, providing the latest and most current capabilities may be required.

Future integrated Carrier Air Wing Concept of Operations (CONOPS) demand changes to the base line Block II Super Hornet. In response, the Block III Super Hornet was submitted. None of the changes to the aircraft are revolutionary; however, the combined impact to the aircraft's capability and its contribution to the Airwing are significant. The initial F/A-18 Block III concept includes low risk changes which will be incorporated in the near term with a combination of forward fit production line incorporation and retrofit modifications to the aircraft already planned as part of the Service Life Modification (SLM) Plan. The FY 2020 budget requested Non-Recurring (NRE) funds for these ECPs.

USMC upgrades to the platform are being developed; to include integration and capability expansion of AESA Radar for F/A-18 A-D, evaluation and development of an Automatic Ground Collision Avoidance System (AUTOGCAS) for all F/A-18 variants, development of increased sensor and Electronic Warfare (EW) capability for F/A-18 A-D, weapons carriage and employment capability expansion, and enhancement of Mission Computer (MC) processing and memory capability.

Funding is added for Naval Aviation Physiological Episode (PE) mitigation and root cause investigation in aircraft.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy	Date: March 2019
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*

Funding for Infrared Search and Track (IRST) (PU 2069) was moved from this Program Element to a new Program Element (PE 0604014N).

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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	224.470	193.086	170.095	-	170.095
Current President's Budget	133.544	204.886	213.715	-	213.715
Total Adjustments	-90.926	11.800	43.620	-	43.620
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	11.800			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.865	0.000			
• Program Adjustments	0.000	0.000	40.975	-	40.975
• Rate/Misc Adjustments	-0.001	0.000	2.645	-	2.645
• Congressional General Reductions Adjustments	-0.160	-	-	-	-
• Congressional Directed Reductions Adjustments	-86.900	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2018	FY 2019
Project: 9999: *Congressional Adds*		
Congressional Add: *Noise Reduction*	0.000	2.000
Congressional Add: *Navy Joint Air-to-Ground Missile for Fixed Wing Aircraft*	0.000	9.800
Congressional Add Subtotals for Project: 9999	0.000	11.800
Congressional Add Totals for all Projects	0.000	11.800

Change Summary Explanation

Technical:

1662: Funding added for Physiological Episode Mitigation.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy	Date: March 2019
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*

2065: Not Applicable
2069: Not Applicable
2071: Not Applicable

Schedule:
1662: MSI program schedule was changed to reflect program execution. Physiological Episode Mitigation, and USMC Capability Upgrades were added to reflect program execution.
2065: Not Applicable
2069: Not Applicable
2071: Block III request for F/A-18E/F capability upgrades Non-recurring Engineering (NRE) funding has been updated to reflect current program status.

The FY 2020 funding request was increased by $44.238 million; $15.000 million for Next Generation Engine (NGE), $29.059 million for Naval Aviation Physiological Episode (PE) mitigation and root cause investigation, and $0.179 million for a rate increase.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy											Date: March 2019	
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 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
1662: *F/A-18 Improvement*	4,356.010	68.166	102.938	117.011	-	117.011	130.334	118.228	91.397	85.524	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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, Counter-Electronic Attack (CEA), Infra-red Search and Track (IRST) integrated with the Active Electronically Scanned Array (AESA) Radar to provide Narrow Band High Gain Electronic Attack and 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 the development and testing of design modifications to address obsolescence issues with the F/A-18 weapon system and ancillary equipment. This funding line continues F/A-18E/F "Flight Plan" spiral capability development, to include 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 and funds development efforts needed for integration of air launched laser guided rockets on F/A-18 A+/C/D. USMC upgrades to the platform are being developed to include evaluation and development of an Automatic Ground Collision Avoidance System (AUTOGCAS) for all F/A-18 variants, development of increased sensor and EW capability for F/A-18 A-D, weapons carriage and employment capability expansion, and enhancement of Mission Computer (MC) processing and memory capability.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**
Title: USMC Capability Upgrades	0.000	0.000	31.687	0.000	31.687
Articles:	-	-	-	-	-
Description: USMC upgrades to the platform are being developed to include evaluation and development of an Automatic Ground Collision Avoidance System (AUTOGCAS) for all F/A-18 variants, development of increased sensor and EW capability for F/A-18 A-D, weapons carriage and employment capability expansion, and enhancement of MC processing and memory capability.					
FY 2019 Plans: N/A					
FY 2020 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Conduct evaluation and development of AUTOGCAS for all F/A-18 variants. Supports development of increased sensor and EW capability for F/A-18 A-D. Funding supports weapon carriage and employment capability expansion, enhanced MC processing and memory capability, and rapid technology insertion upgrades to F/A-18 A-D to accommodate shifts in technology. AUTOGCAS has high Congressional interest as noted in the FY 2019 NDAA language. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Funds are increased for evaluation and development of an AUTOGCAS for all F/A-18 variants and development of increased sensor and EW capability for F/A-18 A-D, capability expansion of weapons carriage and employment capability expansion, and enhanced mission computer processing and memory capability.					
Title: Multi-System Integration (MSI) / Common Tactical Picture (CTP)	45.898	39.891	47.713	0.000	47.713
Articles:	-	-	-	-	-
Description: MSI 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 and 29. Initially all "X" labeled builds to include Block I Super Hornets, now 27 and 29 will no longer include Super Hornets thus going back to a "C" SCS label designation to include only legacy A-D aircraft. ***FY 2019 Plans:*** Flight Plan MSI of capabilities continues through mission computer, JMPS UPC, and weapon system software SC) updates associated with each incremental Block (H build) software update to include Software Modernization and Cyber. Advances in Super Hornet Air and Surface Warfare will continue with ongoing integration of weapons and sensors into a CTP, Display Improvements to enhance air-to-air and air-to-surface situational awareness and aircrew decision superiority, and Counter Electronic Attack enhancements to improve survivability and lethality. Increased engineering efforts for integration of active and passive kill chain capabilities and sensors associated with Flight Plan NIFC-CA, OASuW and Strike Accelerator FNC Target Identification transition efforts continues. MSI algorithm and sensor developmental efforts also increase at test activities, including ongoing modeling and simulation upgrades such as Net Enabled Weapon Controller Interface Model interoperability software and equipment, and Live Virtual Constructive developmental efforts. Increased Test and Evaluation funding in FY19 provides funding to COTF for MSI OT. ***FY 2020 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Flight Plan MSI and associated Common Tactical Picture (CTP) capabilities will continue through mission computer, JMPS UPC, and weapon system software SCS updates associated with each incremental Block (H build) software update to include Software Modernization, Cyber protections, and speed to fleet initiatives. Advances in Super Hornet Air and Surface Warfare will continue with ongoing integration of weapons and sensors into a CTP, Display Improvements to enhance air-to-air and air-to-surface situational awareness and aircrew decision superiority, continued development of third party software applications and protocols for rapid fleet capability delivery, and Counter Electronic Attack enhancements to improve survivability and lethality. Increased engineering efforts for integration of active and passive kill chain capabilities and sensors associated with Flight Plan NIFC-CA and OASuW FNC Target Identification transition efforts continues. Airwing interoperability requirements, CTP algorithm and aircraft division level sensor fusion and management, and developmental test efforts also increase at test activities, including ongoing modeling and simulation upgrades such as Net Enabled Weapon Controller Interface Model interoperability software and equipment, Live Virtual Constructive developmental efforts, and Minotaur research and integration testing. Increased Test and Evaluation funding in FY 2020 provides funding to CTP development and risk reduction, interoperability and testing associated with H16 Operational Testing. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Funding is increased for the development of Common Tactical Picture (CTP) capability needed to support multi-aircraft sensor management from several sources to derive a more effective targeting solution; improves kill chain lethality.					
Title: Flight Plan Engineering / System Configuration Set Development and Integration	14.568	32.397	7.740	0.000	7.740
Articles:	-	-	-	-	-
Description: Continue 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 2019 Plans:*** Continue Flight Plan Engineering efforts to include F/A-18E/F improvements necessary for Super Hornet relevance and tactical supremacy, Software Modernization and Cyber, 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.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Increase in FY19 is due to incorporating AESA Multiple Target Tracking Algorithm & Tracking Confirmation, and transitions ONR FNC Strike Accelerator developed target recognition (AiTR) algorithms. Funding supports (hardware and software), test and integration efforts for Flight Plan requirements such as 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); Advanced Targeting Forward Looking Infrared modernization and obsolescence mitigation efforts; and Precision Approach and Landing Capability, in support of Integrated Capability Package 2 and 3. ***FY 2020 Base Plans:*** Continue Flight Plan Engineering efforts to include F/A-18E/F improvements necessary for Super Hornet relevance and tactical supremacy, Software Modernization and Cyber, Navy Integrated Fire Control-Counter Air system configuration set requirements to support Navy Integrated Air and Missile Defense capability requirements and enhanced F/A-18 Cooperative Engagement Capability. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Funding decrease of $24.557 million is attributable to the realignment of Flight Plan funding into other R-2a budget cost items (i.e., USMC Capability Upgrades).					
Title: Physiological Episode Mitigation	5.100	28.000	27.266	0.000	27.266
Articles:	-	-	-	-	-
Description: Funding provides for design, development, integration and test of platform improvements for F/A-18A-F and EA-18G Weapon Systems to include Naval Aviation Physiological Episode (PE) mitigation and root cause investigation in aircraft (F/A-18A-F and EA-18G). ***FY 2019 Plans:*** Continue studies & development efforts for platform improvements for F/A-18A-F and EA-18G Weapon Systems, including F/A-18 and EA-18G PE mitigation and root cause investigation. ***FY 2020 Base Plans:*** Continue studies & development efforts for platform improvements for F/A-18A-F and EA-18G Weapon Systems, including F/A-18 and EA-18G PE mitigation and root cause investigation. Utilizing a data-driven approach with					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Failure/Fault Tree and closure planning. Will conduct manned and unmanned flight testing as well as Root Cause Analysis (RCCA). ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $.614 million is attributable to rate changes.					
Title: Test Wing Maintenance Conversion ***Articles:*** ***Description:*** Funding supports maintenance of aircraft at NAVAIR Test Wing used to support Program Office objectives. ***FY 2019 Plans:*** Perform aircraft maintenance on Test Wing aircraft. ***FY 2020 Base Plans:*** Perform aircraft maintenance on Test Wing aircraft. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Funds are increased to reflect annual escalation.	2.500 -	2.550 -	2.501 -	0.000 -	2.501 -
Title: F/A-18 Obsolescence Redesign ***Articles:*** ***Description:*** Develop and test modifications to address obsolescence issues. ***FY 2019 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 2020 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 2020 OCO Plans:***	0.100 -	0.100 -	0.104 -	0.000 -	0.104 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Funding was increased to reflect annual escalation.					
Accomplishments/Planned Programs Subtotals	68.166	102.938	117.011	0.000	117.011

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• APN/0525: *F-18 SERIES*	1,007.030	1,159.675	1,227.089	-	1,227.089	1,293.248	1,502.252	1,936.725	1,898.026	7,770.655	27,479.309
• RDTEN/3063: *EA-18G DEVELOPMENT*	137.029	147.419	143.585	-	143.585	118.535	67.546	69.981	72.985	Continuing	Continuing
• APN/0145: *FA-18E/F*	1,826.192	1,922.275	1,802.911	-	1,802.911	1,780.868	1,186.989	1,216.228	1,246.678	0.000	55,994.869
• APN/0145C: *FA-18E/F*	52.971	53.977	55.128	-	55.128	28.079	28.640	29.213	29.797	0.000	277.805

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 multiple Weapon System Capabilities including: 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; Multi-System Integration; Common Tactical Picture (CTP); 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.
- Multi-System Integration/Common Tactical Picture. Multi-System Integration and Common Tactical Picture capability is being developoed under the NAWCWD System Configuration Set (SCS) Cost plus fixed fee contract.

E. Performance Metrics

Execute the system engineering process for software delivery and support the design, development, integration, and sensor fusion of the contributing systems for MSI capabilities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Multi System Integration - Develop Sensor Integration	C/IDIQ	Various : Various	9.965	15.157	Feb 2018	17.387	Feb 2019	18.000	Feb 2020	-		18.000	Continuing	Continuing	Continuing
Multi-System Integration Development Support	WR	NAWCWD : China Lake, CA	13.500	14.953	Dec 2017	17.895	Dec 2018	15.410	Dec 2019	-		15.410	0.000	61.758	-
Multi-System Integration Development Support	WR	NAWCAD : Pax River, MD	5.000	7.159	Dec 2017	10.508	Dec 2018	5.999	Dec 2019	-		5.999	0.000	28.666	-
Physiological Episode Mitigation- Development	TBD	Various : Various	0.000	0.000		24.500	Jan 2019	24.680	Jan 2020	-		24.680	0.000	49.180	-
USMC Upgrades - Electronic Warfare	TBD	Raytheon : El Segundo, CA	0.000	0.000		0.000		1.500	Oct 2019	-		1.500	0.000	1.500	1.500
USMC Upgrades - Mission Computer	TBD	General Dynamics : Various	0.000	0.000		0.000		1.000	Oct 2019	-		1.000	0.000	1.000	1.000
USMC Upgrades - Wpns Integration	TBD	Boeing : St Louis, MO	0.000	0.000		0.000		1.500	Oct 2019	-		1.500	0.000	1.500	1.500
USMC Upgrades	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		8.987	Oct 2019	-		8.987	0.000	8.987	-
USMC Upgrades - AUTOCAS	TBD	Various : Various	0.000	0.000		0.000		18.700	Oct 2019	-		18.700	48.200	66.900	-
Flight Plan / PALC(WAAS)	C/CPFF	Boeing : St. Louis, MO	7.314	1.745	Aug 2018	2.451	Dec 2018	1.890	Dec 2019	-		1.890	0.000	13.400	13.400
Flight Plan/SCS Development	WR	NAWCAD : Pax River, MD	11.647	1.000	Dec 2017	1.020	Dec 2018	1.040	Dec 2019	-		1.040	0.000	14.707	-
Flight Plan/SCS Development (Magic Carpet)	C/CPIF	Boeing : St. Louis, MO	16.697	4.500	Dec 2017	4.000	Dec 2018	1.499	Dec 2019	-		1.499	0.000	26.696	26.696
Flight Plan/SCS Development	Various	DMEA : Various	0.000	4.600	Dec 2017	2.193	Dec 2018	1.000	Dec 2019	-		1.000	0.000	7.793	-
ATFLIR Modernization	TBD	Various : Various	0.740	0.000		0.100	Dec 2018	0.100	Dec 2019	-		0.100	0.000	0.940	-
Prior Year Prod Dev cost no longer funded in FYDP	Various	Various : Various	774.426	0.000		0.000		0.000		-		0.000	0.000	774.426	-
		Subtotal	839.289	49.114		80.054		101.305		-		101.305	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

FY 2020 increased funds are for USMC Capability Upgrades, Physiological Episodes, and Enhanced Engines.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Multi-System Integration Development Support	WR	NSMA : Arlington, VA	6.900	1.679	Mar 2018	1.713	Mar 2019	1.703	Mar 2020	-		1.703	Continuing	Continuing	Continuing
Physiological Episode Mitigation- Support	Various	Various : Various	0.000	4.100	Feb 2018	2.500	Dec 2018	0.500	Dec 2019	-		0.500	6.000	13.100	-
Flight Plan/System Configuration Set Development & Integration	WR	NAWCAD : Pax River, MD	5.777	0.350	Nov 2017	0.307	Nov 2018	0.000		-		0.000	0.000	6.434	-
ATFLIR Modernization - Development Support	WR	NAWCWD : China Lake, CA	0.000	0.000		0.050	Nov 2018	0.000		-		0.000	0.000	0.050	-
Obsolescence Redesign	Various	Various : Various	1.900	0.100	Jun 2018	0.100	Jun 2019	0.000		-		0.000	Continuing	Continuing	Continuing
Prior Year Support costs no longer funded in FYDP	Various	Various : Various	3,106.545	0.000		0.000		0.000		-		0.000	0.000	3,106.545	-
		Subtotal	3,121.122	6.229		4.670		2.203		-		2.203	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Multi-System Integration	WR	OPTEVFOR : Norfolk, VA	1.461	5.100	Dec 2017	10.102	Dec 2018	5.354	Dec 2019	-		5.354	Continuing	Continuing	Continuing
Physiological Episode Mitigation- Test & Evaluation	WR	NMRC : Silver Spring, MD	0.200	1.000	Jan 2018	1.000	Dec 2018	1.000	Dec 2019	-		1.000	1.000	4.200	-
ATFLIR Modernization - Developmental Test	WR	NAWCWD : China Lake, CA	0.000	0.000		0.100	Nov 2018	0.200	Nov 2019	-		0.200	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year T&E costs no longer funded in FYDP	Various	Various : Various	194.414	0.000		0.000		0.000		-		0.000	0.000	194.414	-
		Subtotal	196.075	6.100		11.202		6.554		-		6.554	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Mgmt Support - MISC	Various	NAWCAD : Pax River, MD	16.964	0.659	Dec 2017	0.672	Dec 2018	0.685	Dec 2019	-		0.685	Continuing	Continuing	Continuing
Seaport CSS - Program Management Support	C/CPFF	Wyle Lab : Pax River, MD	27.392	2.453	Dec 2017	2.655	Dec 2018	2.608	Dec 2019	-		2.608	0.000	35.108	35.108
Travel	Various	NAVAIR : Pax River, MD	5.673	0.250	Nov 2017	0.255	Dec 2018	0.260	Dec 2019	-		0.260	Continuing	Continuing	Continuing
Test Wing Maintenance Conversion	WR	NAWCAD : Pax River, MD	34.983	1.250	Dec 2017	1.275	Dec 2018	1.200	Dec 2019	-		1.200	Continuing	Continuing	Continuing
Test Wing Maintenance Conversion	WR	NAWCWD : China Lake, CA	35.909	1.250	Dec 2017	1.275	Dec 2018	1.300	Dec 2019	-		1.300	Continuing	Continuing	Continuing
Flight Plan / System Configuration Set Development & Integration	WR	NAWCAD : Pax River, MD	6.809	0.431	Dec 2017	0.440	Dec 2018	0.448	Dec 2019	-		0.448	Continuing	Continuing	Continuing
Flight Plan / System Configuration Set Development & Integration	WR	NAWCWD : China Lake, CA	6.808	0.430	Dec 2017	0.440	Dec 2018	0.448	Dec 2019	-		0.448	Continuing	Continuing	Continuing
Prior Year Mgmt costs no longer funded in FYDP	Various	Various : Various	64.986	0.000		0.000		0.000		-		0.000	0.000	64.986	-
		Subtotal	199.524	6.723		7.012		6.949		-		6.949	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	4,356.010	68.166		102.938		117.011		-		117.011	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

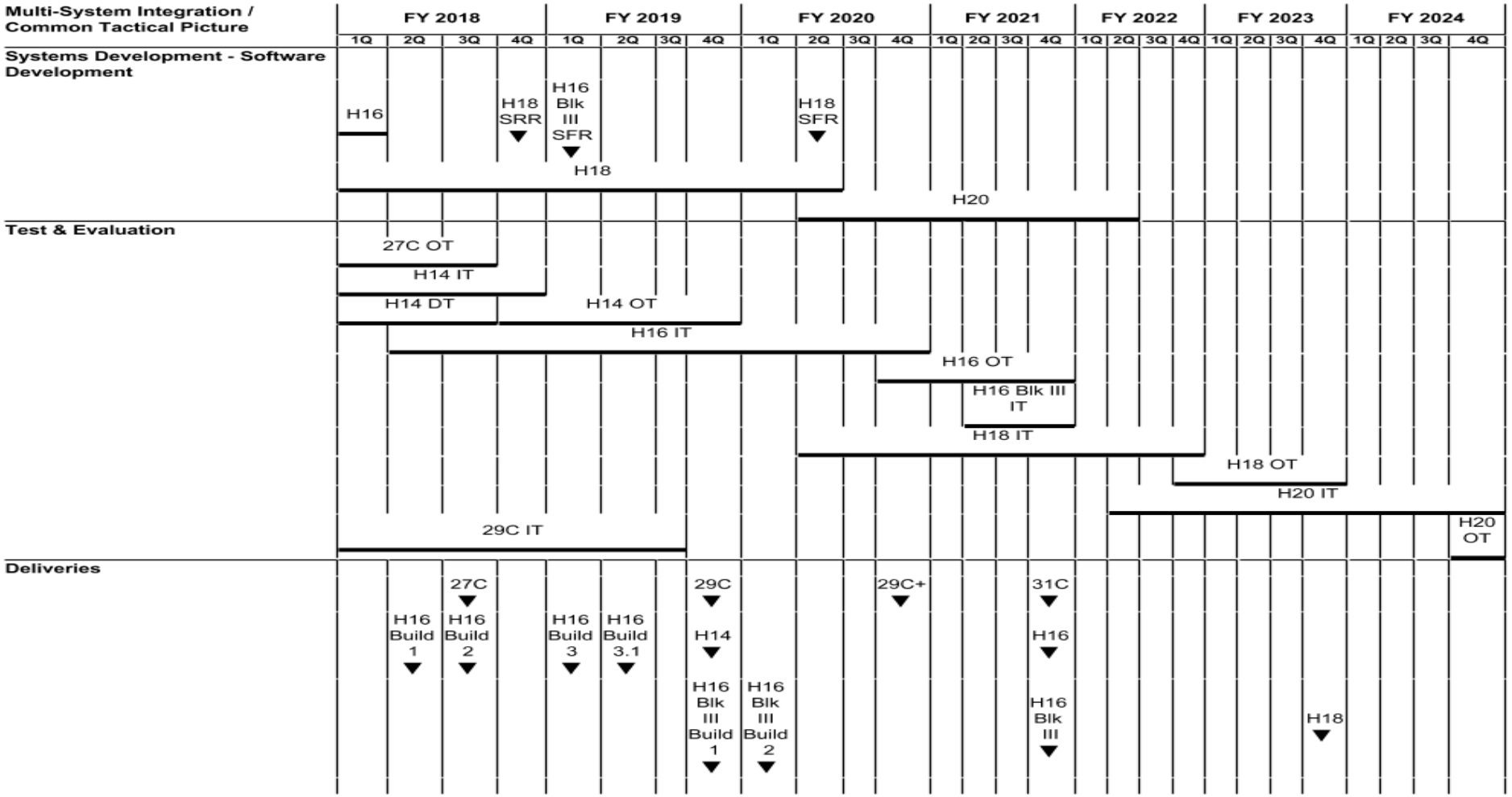


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*

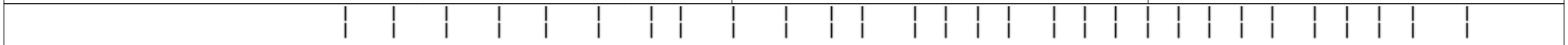
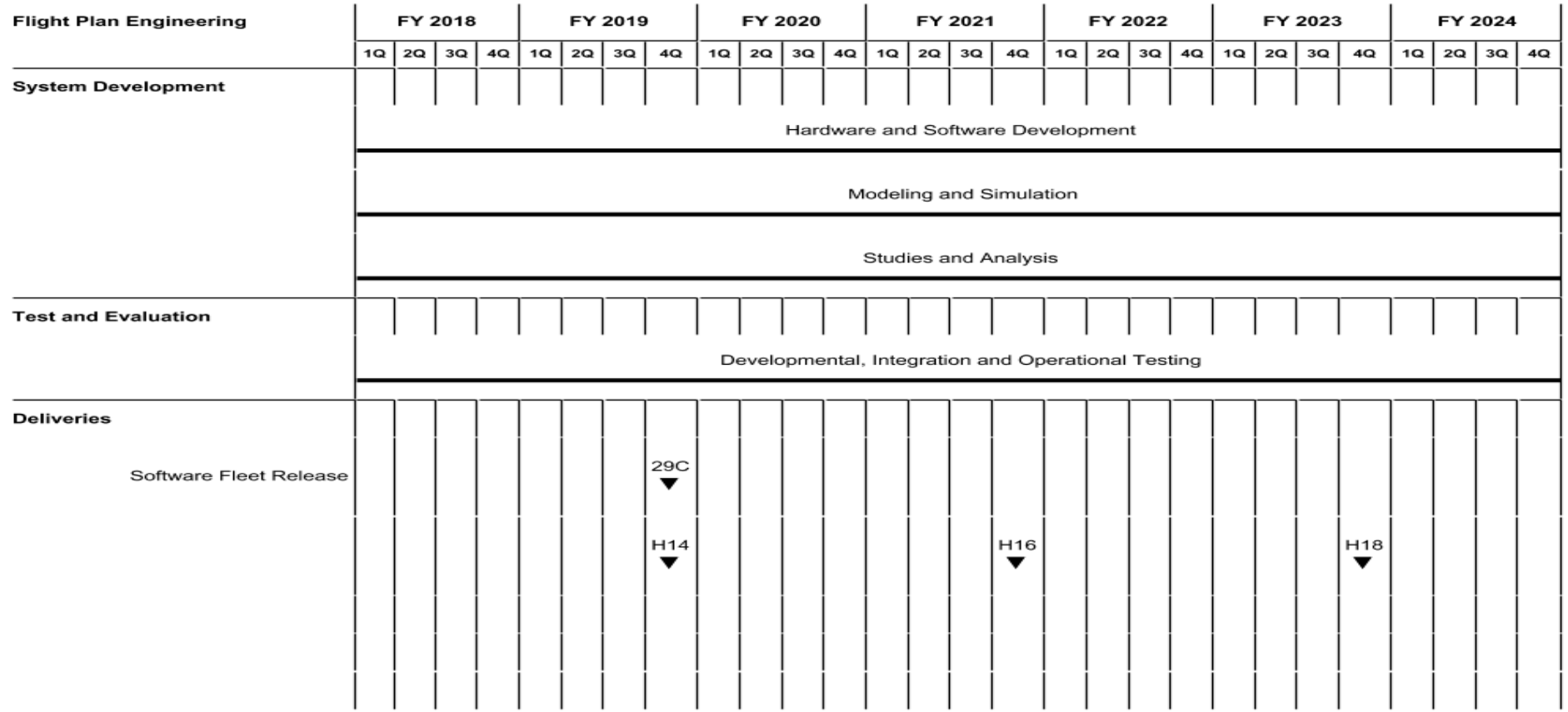
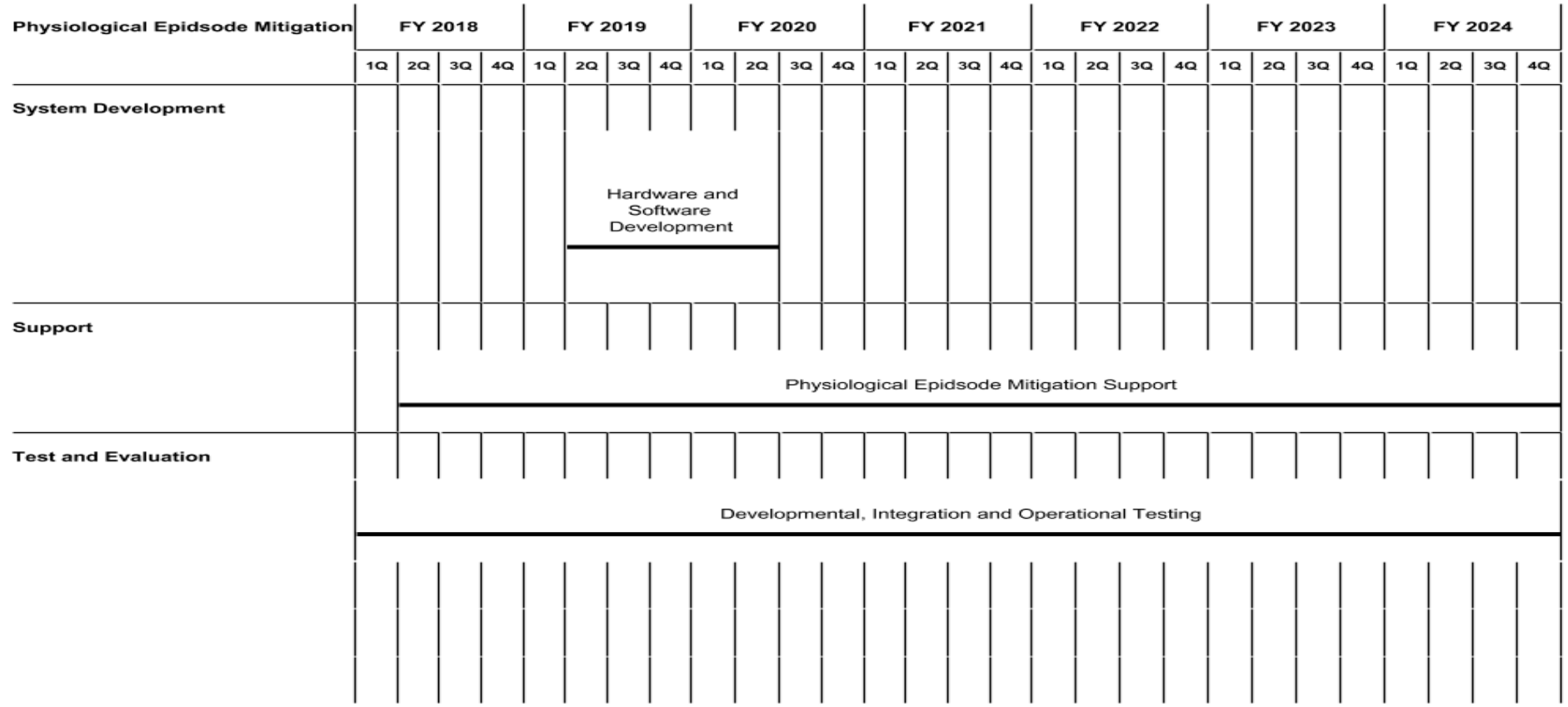


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 1662 / *F/A-18 Improvement*



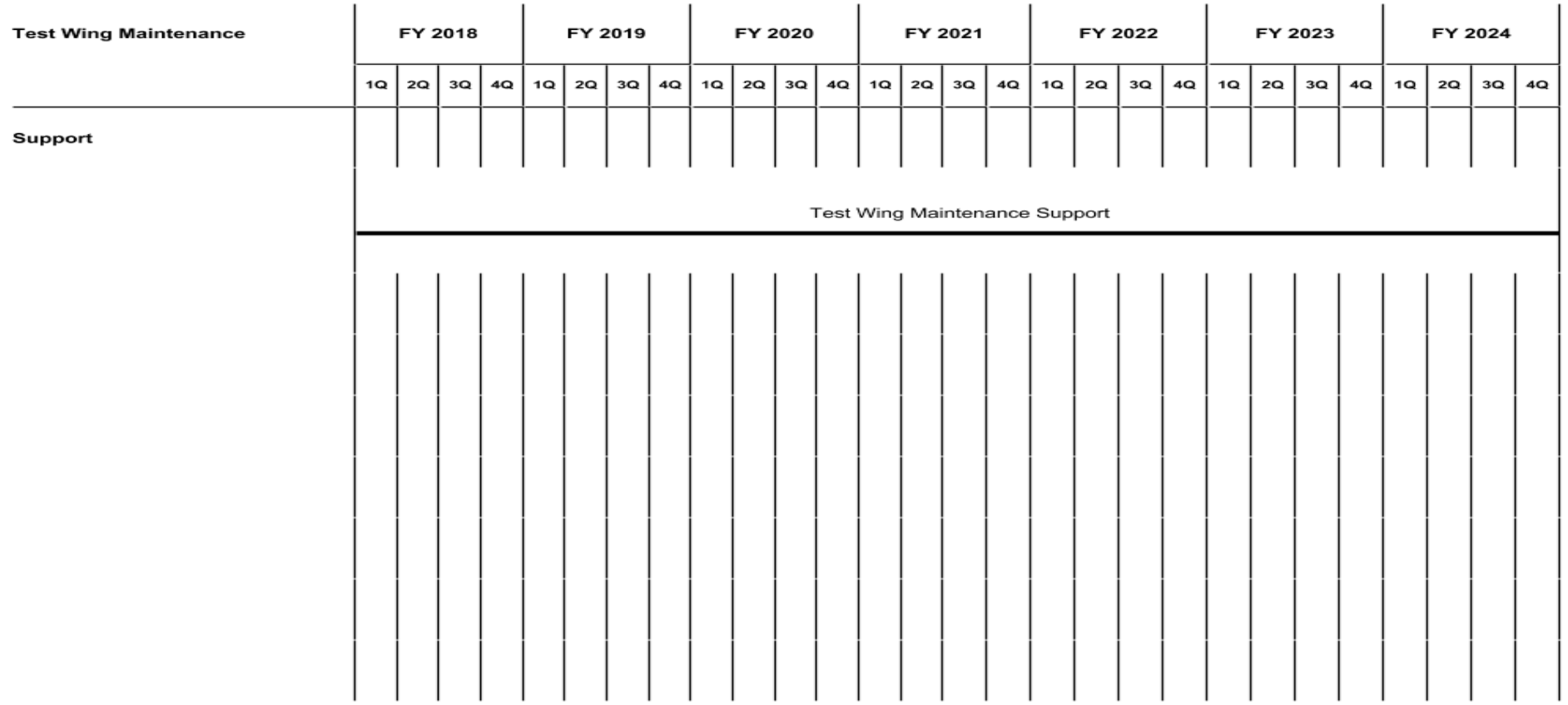
2020OSD - 0204136N - 1662

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*



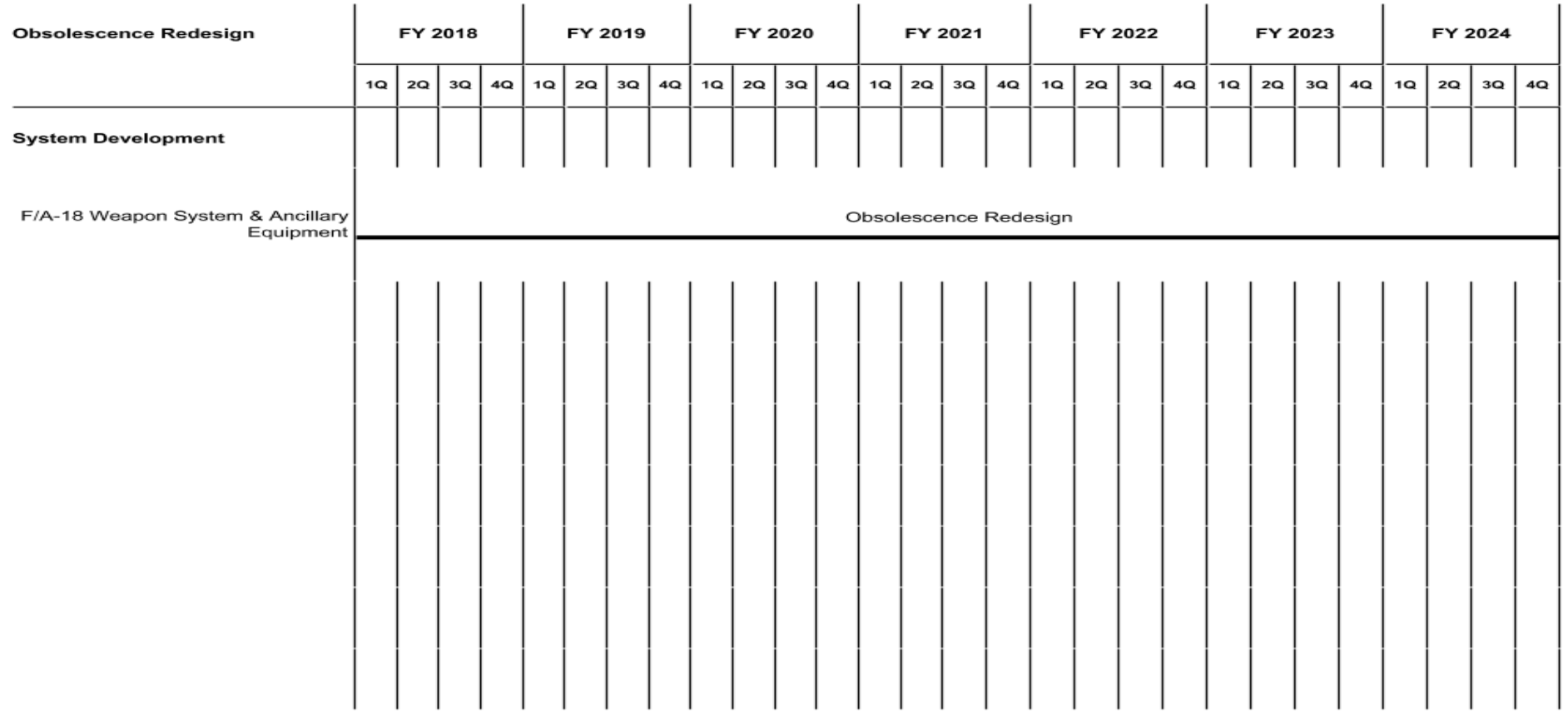
2020OSD - 0204136N - 1662

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*



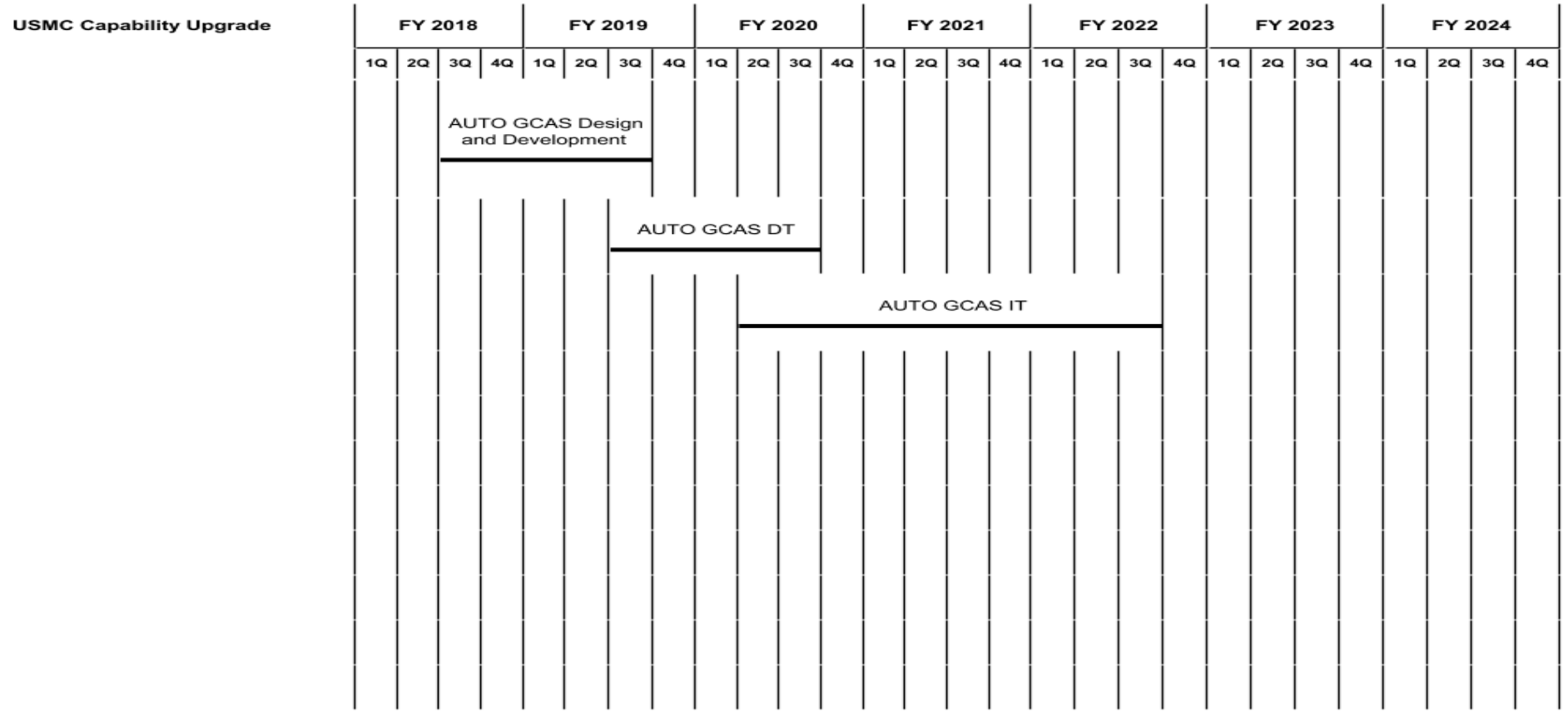
2020OSD - 0204136N - 1662

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*



2020OSD - 0204136N - 1662

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*



2020OSD - 0204136N - 1662

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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**
Multi-System Integration / Common Tactical Picture				
Systems Development - Software Development: H16 Blk III System Functional Review (SFR)	1	2019	1	2019
Systems Development - Software Development: H18 System Requirements Review (SRR)	4	2018	4	2018
Systems Development - Software Development: H18 System Functional Review (SFR)	2	2020	2	2020
Systems Development - Software Development: H16 Software Development	1	2018	1	2018
Systems Development - Software Development: H18 Software Development	1	2018	2	2020
Systems Development - Software Development: H20 Software Development	2	2020	2	2022
Test & Evaluation: 27C Operational Testing	1	2018	3	2018
Test & Evaluation: H14 Integration Testing	1	2018	4	2018
Test & Evaluation: H14 Developmental Testing	1	2018	3	2018
Test & Evaluation: H14 Operational Testing	4	2018	4	2019
Test & Evaluation: H16 Integration Testing	2	2018	4	2020
Test & Evaluation: H16 Operational Testing	4	2020	4	2021
Test & Evaluation: H16 Blk III Integration Testing	2	2021	4	2021
Test & Evaluation: H18 Integration Testing	2	2020	4	2022
Test & Evaluation: H18 Operational Testing	4	2022	4	2023
Test & Evaluation: H20 Integration Testing	2	2022	4	2024
Test & Evaluation: H20 Operational Testing	4	2024	4	2024
Test & Evaluation: 29C Integration Testing	1	2018	3	2019
Deliveries: 27C Fleet Release	3	2018	3	2018
Deliveries: 29C Fleet Release	4	2019	4	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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: 29C+ Fleet Release	4	2020	4	2020
Deliveries: 31C Fleet Release	4	2021	4	2021
Deliveries: H14 Fleet Release	4	2019	4	2019
Deliveries: H16 Build 1	2	2018	2	2018
Deliveries: H16 Build 2	3	2018	3	2018
Deliveries: H16 Build 3	1	2019	1	2019
Deliveries: H16 Build 3.1	2	2019	2	2019
Deliveries: H16 Fleet Release	4	2021	4	2021
Deliveries: H16 Blk III Build 1	4	2019	4	2019
Deliveries: H16 Blk III Build 2	1	2020	1	2020
Deliveries: H16 Blk III Fleet Release	4	2021	4	2021
Deliveries: H18 Fleet Release	4	2023	4	2023
Flight Plan Engineering				
System Development: Hardware and Software Development	1	2018	4	2024
System Development: Modeling and Simulation	1	2018	4	2024
System Development: Studies and Analysis	1	2018	4	2024
Test and Evaluation: Developmental, Integration and Operational Testing	1	2018	4	2024
Deliveries: Software Fleet Release: 29C Fleet Release	4	2019	4	2019
Deliveries: Software Fleet Release: H14 Fleet Release	4	2019	4	2019
Deliveries: Software Fleet Release: H16 Fleet Release	4	2021	4	2021
Deliveries: Software Fleet Release: H18 Fleet Release	4	2023	4	2023
Physiological Epidsode Mitigation				
System Development: Hardware and Software Development	2	2019	2	2020
Support: Physiological Epidsode Mitigation Support	2	2018	4	2024
Test and Evaluation: Developmental, Integration and Operational Testing	1	2018	4	2024
Test Wing Maintenance				

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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**
Support: Test Wing Maintenance Support	1	2018	4	2024
Obsolescence Redesign				
System Development: F/A-18 Weapon System & Ancillary Equipment: Obsolescence Redesign Development & Testing	1	2018	4	2024
USMC Capability Upgrade				
AUTO GCAS Design and Development	3	2018	3	2019
AUTO GCAS DT	3	2019	3	2020
AUTO GCAS IT	2	2020	3	2022

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
2065: *F/A-18 Radar Upgrade*	737.378	7.838	7.002	8.706	-	8.706	8.674	8.842	9.004	9.185	Continuing	Continuing
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(CEA) 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. This budget request supports development and testing of design modifications to address obsolescence issues with APG-65, APG-73 and APG-79 RADAR systems. USMC upgrades to the platform are being developed to include capability expansion of AESA Radar for F/A-18 A-D.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Distributed Targeting - CEA Software Development, Developmental Testing, Operational Testing, & Integration	6.939	6.085	7.549	0.000	7.549
Articles:	-	-	-	-	-
Description: Funding being utilized to support hardware (HW) and software (SW) capabilities development, integration and associated testing.					
FY 2019 Plans: Continue HW/SW development, integration and testing of instrumentation required to support AESA RADAR spiral capability upgrades. Funds engineering efforts associated with software development and integration of active and passive kill chain capabilities and sensors into the AESA Radar in support of CEA. H14 Operational testing and H16 Integration testing starts in FY18 and continues into FY19.					
FY 2020 Base Plans: Continued HW/SW development, integration and testing of instrumentation required to support AESA RADAR spiral capability upgrades. Funds engineering efforts for software development and integration of active and					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
passive kill chain capabilities and sensors into the AESA Radar in support of CEA. Funding supports USMC capability upgrades for integration and capability expansion of AESA Radar for F/A-18 A-D. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Funding increase of $1.509 million for H16 CEA software development requirements that provide additional active and passive kill chain capabilities.					
Title: F/A-18 RADAR Obsolescence Redesign	0.899	0.917	1.157	0.000	1.157
Articles:	-	-	-	-	-
Description: Funding provided for development and design modifications to address obsolescence issues in the RADAR. ***FY 2019 Plans:*** Develop and test design modifications to hardware components and software systems in response to F/A-18 RADAR system obsolescence issues. ***FY 2020 Base Plans:*** Continued development and test design modifications to hardware components and software systems in response to F/A-18 RADAR system obsolescence issues. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Funding was increased by $.240 million for RADAR obsolescence issues.					
Accomplishments/Planned Programs Subtotals	7.838	7.002	8.706	0.000	8.706

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• APN/05250: *F-18 Series Mod (OSIP 002-07)*	74.052	150.117	160.304	-	160.304	72.544	62.209	142.941	145.801	3.799	1,964.696
• APN/0145: *FA-18E/F*	1,826.192	1,922.275	1,802.911	-	1,802.911	1,780.868	1,186.989	1,216.228	1,246.678	0.000	55,994.869
• APN/0145C: *FA-18E/F*	52.971	53.977	55.128	-	55.128	28.079	28.640	29.213	29.797	0.000	277.805

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	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 FY 1999 through FY 2007 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 RADAR 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 2020 Navy		Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCAD : Pax River, MD	8.264	1.915	Nov 2017	1.374	Nov 2018	2.446	Nov 2019	-		2.446	Continuing	Continuing	Continuing
CEA - Development/ Integration Counter Electronic Attack (CEA)	Various	NSMA : Arlington, VA	82.624	2.645	Dec 2017	2.333	Dec 2018	2.322	Dec 2019	-		2.322	Continuing	Continuing	Continuing
Systems Engineering - Capabilities	WR	NAWCWD : China lake, CA	0.000	1.000	Dec 2017	1.020	Dec 2018	1.400	Dec 2019	-		1.400	0.000	3.420	-
Hardware-Obsolescence	MIPR	DMEA : Sacramento, CA	2.375	0.899	May 2018	0.917	May 2019	1.157	May 2020	-		1.157	Continuing	Continuing	Continuing
Prior Year Prod Dev cost no longer funded in FYDP	Various	Various : Various	468.195	0.000		0.000		0.000		-		0.000	0.000	468.195	-
		Subtotal	561.458	6.459		5.644		7.325		-		7.325	Continuing	Continuing	N/A

Remarks

Funding increased for additional CEA engineering support at NAWCAD, Patuxent River, Maryland.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development (Instrumentation)	WR	NAWCWD : China Lake, CA	44.423	0.150	Dec 2017	0.153	Dec 2018	0.156	Dec 2019	-		0.156	Continuing	Continuing	Continuing
Chamber Support	WR	NSMA : Arlington, VA	0.000	0.500	Dec 2017	0.510	Dec 2018	0.520	Dec 2019	-		0.520	0.000	1.530	-
Obsolescence Redesign	Various	Various : Various	0.370	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior Year Support cost no longer funded in the FYDP	Various	Various : Various	2.027	0.000		0.000		0.000		-		0.000	0.000	2.027	-
		Subtotal	46.820	0.650		0.663		0.676		-		0.676	Continuing	Continuing	N/A

Remarks

Chamber Support: Funding is for (test) chamber support; supports testing of CEA and software capabilities on the RADAR.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test	WR	NAWCWD : China Lake, CA	0.300	0.150	Dec 2017	0.121	Dec 2018	0.130	Dec 2019	-		0.130	Continuing	Continuing	Continuing
Prior Year T&E cost no longer funded in FYDP	Various	Various : Various	111.911	0.000		0.000		0.000		-		0.000	0.000	111.911	-
		Subtotal	112.211	0.150		0.121		0.130		-		0.130	Continuing	Continuing	N/A

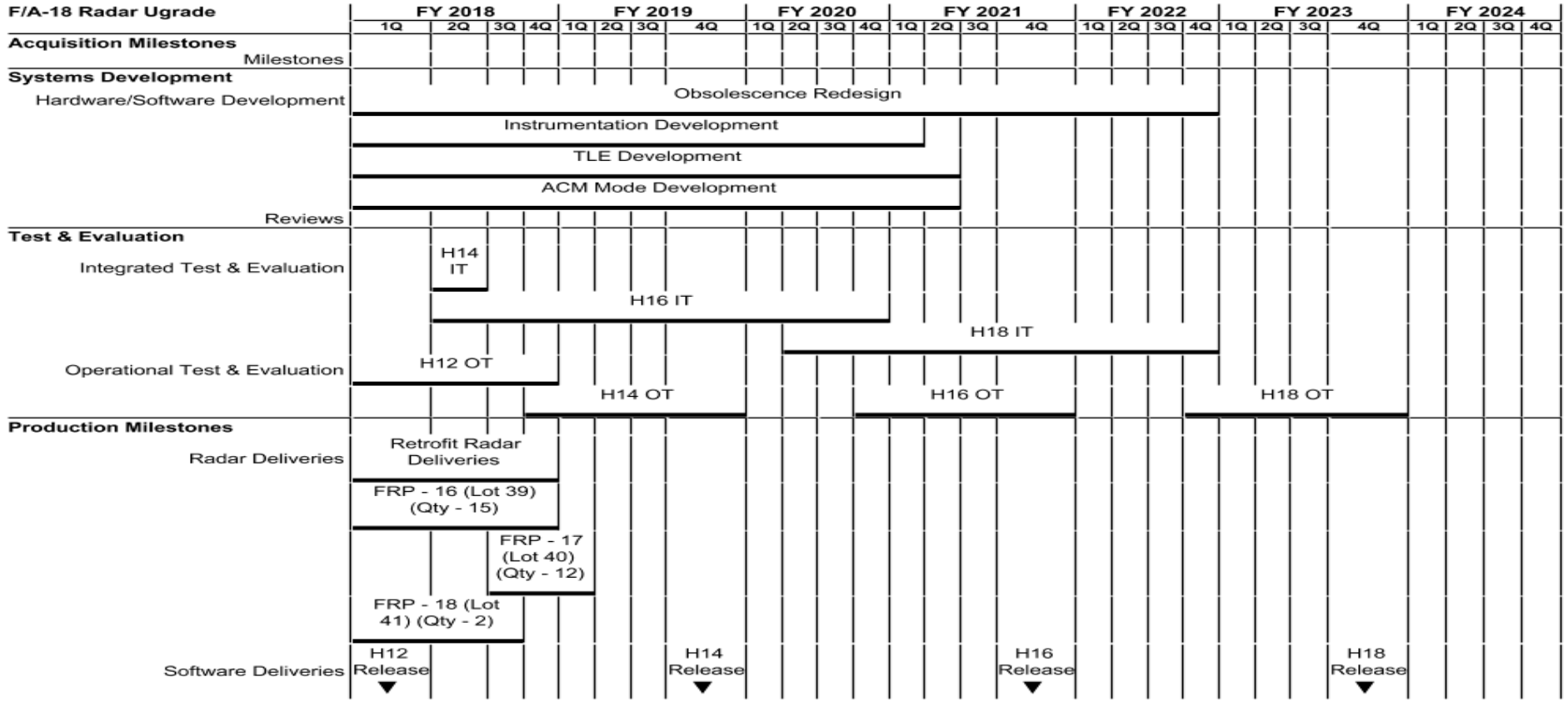
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support (Seaport CSS)	C/CPFF	Wyle : Pax River, MD	8.643	0.414	Dec 2017	0.422	Dec 2018	0.423	Dec 2019	-		0.423	0.000	9.902	9.902
Contractor Engineering Support	Various	Various : Various	3.096	0.018	Dec 2017	0.018	Dec 2018	0.018	Dec 2019	-		0.018	0.000	3.150	-
Program Management Support	WR	NAWCAD : Pax River, MD	3.314	0.101	Dec 2017	0.087	Dec 2018	0.087	Dec 2019	-		0.087	0.800	4.389	-
Travel	Various	NAVAIR : Pax River, MD	1.836	0.046	Nov 2017	0.047	Nov 2018	0.047	Nov 2019	-		0.047	0.000	1.976	-
		Subtotal	16.889	0.579		0.574		0.575		-		0.575	0.800	19.417	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	737.378	7.838		7.002		8.706		-		8.706	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*



2020OSD - 0204136N - 2065

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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	2018	4	2022
Systems Development: Hardware/Software Development: Instrumentation Development	1	2018	1	2021
Systems Development: Hardware/Software Development: TLE Development	1	2018	2	2021
Systems Development: Hardware/Software Development: ACM Mode Development	1	2018	2	2021
Test & Evaluation: Integrated Test & Evaluation: H14 Integration Testing	2	2018	2	2018
Test & Evaluation: Integrated Test & Evaluation: H16 Integration Testing	2	2018	4	2020
Test & Evaluation: Integrated Test & Evaluation: H18 Integration Testing	2	2020	4	2022
Test & Evaluation: Operational Test & Evaluation: H12 Operational Testing	1	2018	4	2018
Test & Evaluation: Operational Test & Evaluation: H14 Operational Testing	4	2018	4	2019
Test & Evaluation: Operational Test & Evaluation: H16 Operational Testing	4	2020	4	2021
Test & Evaluation: Operational Test & Evaluation: H18 Operational Testing	4	2022	4	2023
Production Milestones: Radar Deliveries: Retrofit Radar Deliveries	1	2018	4	2018
Production Milestones: Radar Deliveries: FRP Deliveries B - 16 (Lot 39)	1	2018	4	2018
Production Milestones: Radar Deliveries: FRP Deliveries B - 17 (Lot 40)	3	2018	1	2019
Production Milestones: Radar Deliveries: FRP Deliveries B - 18 (Lot 41)	1	2018	3	2018
Production Milestones: Software Deliveries: H12 FLEET RELEASE	1	2018	1	2018
Production Milestones: Software Deliveries: H14 FLEET RELEASE	4	2019	4	2019
Production Milestones: Software Deliveries: H16 FLEET RELEASE	4	2021	4	2021
Production Milestones: Software Deliveries: H18 FLEET RELEASE	4	2023	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 2069 / *F/A-18 Infrared Search and Track (IRST)*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
2069: *F/A-18 Infrared Search and Track (IRST)*	94.094	0.078	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	94.172
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: P510

Note

Proj: 2069 F/A-18 Infrared Search and Track (IRST) has been transferred to a stand alone Program Element 0604014N F/A-18 Infrared Search and Track (IRST) beginning in FY18.

A. Mission Description and Budget Item Justification

F/A-18 Infra-Red Search and Track (IRST): The F/A-18 E/F IRST system is a passive long-wave Infra-Red (IR) sensor which provides an alternate fire control system in a high Electronic Attack / Radio Detection and Ranging (RADAR) denied environment. The IRST Block II Engineering Change Proposal (ECP) upgrades two Weapons Replaceable Assemblies (WRAs); the Infra-Red Receiver (IRR) and processor in order to provide full Capabilities Development Document (CDD) capability and enhanced warfighting capability through an improved engagement timeline, improved situational awareness, longer range passive detection and tracking and a larger field of regard with specification performance.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Infra-Red Search and Track (IRST)	0.078	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Technology development and engineering and manufacturing development of an IRST sensor for the F/A-18 E/F. Block I supported technology development and engineering and manufacturing development of an IRST sensor for the F/A-18E/F to provide an alternate fire control system in a high Electronic Attack / Radio Detection and Ranging (RADAR) denied environment. Block I systems currently in production will be utilized as test assets for continued integration, tactics development and aircrew familiarization; will be upgraded via retrofit to a Block II configuration prior to fleet delivery. Block II IRST upgrades the Infra-Red Receiver (IRR) and processor to provide full Capabilities Development Document (CDD) capability and enhanced warfighting capability through an improved engagement timeline, improved situational awareness, longer range passive detection and tracking and a larger field of regard with specification performance.					
FY 2019 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2069 / *F/A-18 Infrared Search and Track (IRST)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.078	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• APN/05250: *F-18 Series Mod (OSIP 04-14)*	134.034	60.195	0.000	85.835	85.835	185.110	229.598	199.719	208.859	321.601	1,582.317

Remarks

D. Acquisition Strategy

Infra-Red Search and Track (IRST). The IRST system is an evolutionary Navy acquisition program with Block I and Block II capabilities. The IRST Block I system developed by the Navy provides a basic capability, supported integration of the sensor onto a fuel tank and into the aircraft and supported aeromechanical flight test required for clearance and carrier qualification of the system. IRST Block I is in the Production and Deployment phase following a successful MS-C decision in December 2014 and will support continued integration with the F/A-18E/F Advanced Mission Computer software through flight testing with System Configuration Sets H14 and H16.

IRST Block II is an ECP to upgrade two WRAs that will provide full CDD capability. Early risk reduction activities were initiated in FY2016, the program executed a pre-development In Progress Review (IPR 1) in October 2017 and has a planned pre-production IPR (IPR 2) scheduled for 4th Quarter FY2018 leading to a planned low rate initial production (APN-5 funded) start in FY2019 to achieve an Initial Operating Capability (IOC) in 4th Quarter FY2021.

E. Performance Metrics

IRST Program achieved MS B on 17 June 2011, achieved MS C on 02 December 2014. IRST Block II Pre-Development IPR-1 was conducted 1st Quarter 2018; Pre-Production IPR-2 is scheduled for 4th Quarter FY2018.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2069 / *F/A-18 Infrared Search and Track (IRST)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Development (Hardware/Software) Infra-Red Search and Track (IRST)	Various	Boeing : St. Louis, MO	36.266	0.000		0.000		0.000		-		0.000	0.000	36.266	36.266
Hardware Development	MIPR	USAF (MIT) : Hanscom AFB, MA	0.522	0.000		0.000		0.000		-		0.000	0.000	0.522	-
Software (S/W) Development	WR	NAWCWD : China Lake, CA	5.283	0.000		0.000		0.000		-		0.000	0.000	5.283	-
IRST Support Equipment Development	WR	NAWCAD : Lakehurst, NJ	0.047	0.000		0.000		0.000		-		0.000	0.000	0.047	-
Primary Development	Various	NSMA : Various	40.156	0.000		0.000		0.000		-		0.000	0.000	40.156	-
		Subtotal	82.274	0.000		0.000		0.000		-		0.000	0.000	82.274	N/A

Remarks

NAWCAD Lakehurst, New Jersey, is developing Support Equipment necessary to support the IRST pods. Block II EMD effort ramps up significantly in FY 2019 to support alignment with H16 development and testing in order to achieve IOC in FY 2021.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NAWCWD : China Lake, CA	1.133	0.000		0.000		0.000		-		0.000	0.000	1.133	-
Development Support	WR	NAWCAD : Patuxent River, MD	2.239	0.000		0.000		0.000		-		0.000	0.000	2.239	-
Development Support	WR	NSWC : Indian Head, MD	0.060	0.000		0.000		0.000		-		0.000	0.000	0.060	-
Development Support	WR	NAWCWD : Pt. Mugu, CA	0.022	0.000		0.000		0.000		-		0.000	0.000	0.022	-
Development Support	WR	FRC Southeast : Jacksonville, FL	0.917	0.000		0.000		0.000		-		0.000	0.000	0.917	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 2069 / *F/A-18 Infrared Search and Track (IRST)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	C/CPFF	NRL : Washington, DC	0.338	0.000		0.000		0.000		-		0.000	0.000	0.338	0.338
Development Support	WR	NAVSUP : Mechanicsburg, PA	0.040	0.000		0.000		0.000		-		0.000	0.000	0.040	-
Obsolescence Redesign	Various	Various : Various	0.250	0.000		0.000		0.000		-		0.000	0.000	0.250	-
		Subtotal	4.999	0.000		0.000		0.000		-		0.000	0.000	4.999	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	WR	NAWCAD : Patuxent River, MD	1.183	0.000		0.000		0.000		-		0.000	0.000	1.183	-
Developmental Test & Evaluation (DT&E)	WR	NAWCWD : China Lake, CA	5.337	0.000		0.000		0.000		-		0.000	0.000	5.337	-
Operational Test & Evaluation (OT&E) - CSS	Various	OPTEVFOR : VX-9	0.106	0.000		0.000		0.000		-		0.000	0.000	0.106	-
Operational Test & Evaluation (OT&E) - CSS	Various	OPTEVFOR : Norfolk, VA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	6.626	0.000		0.000		0.000		-		0.000	0.000	6.626	N/A

Management Services ($ in Millions)

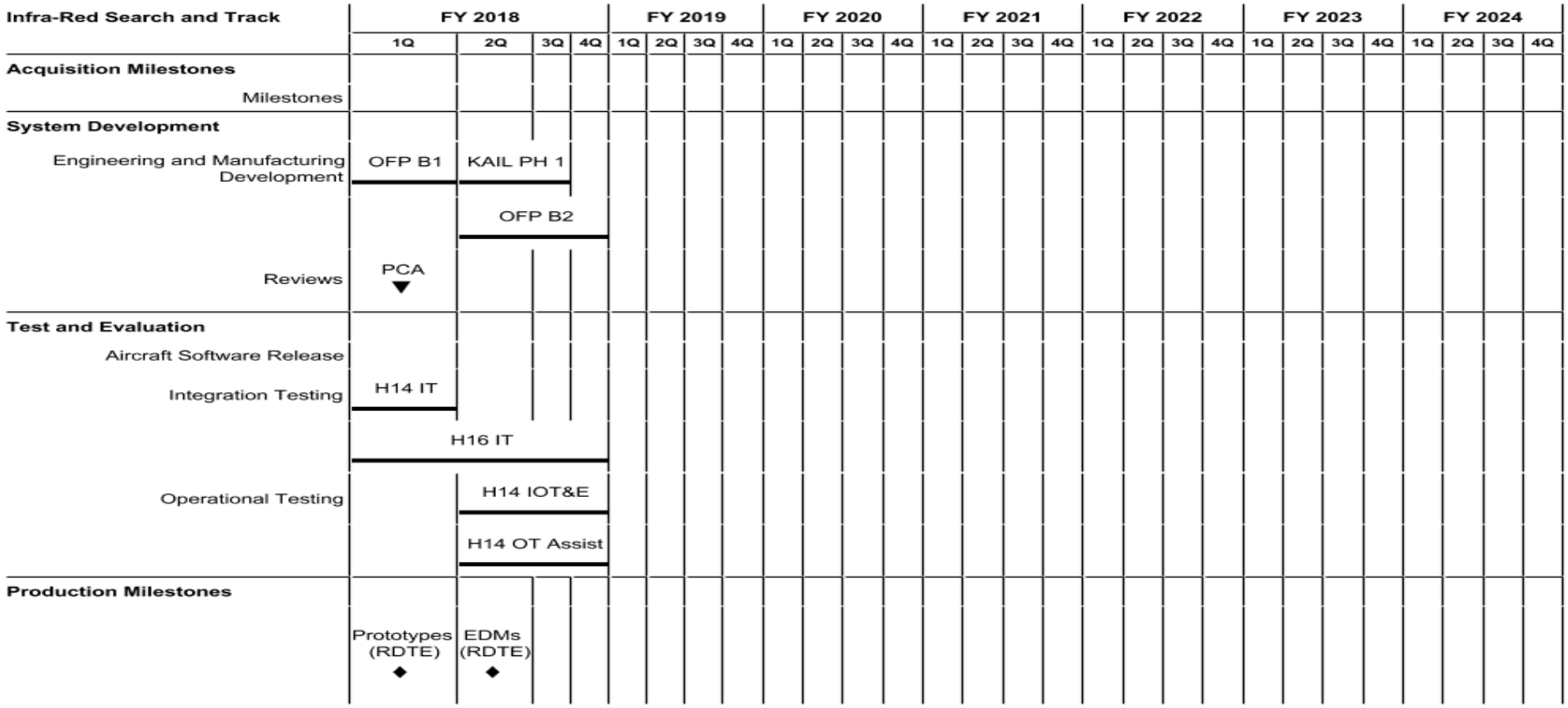
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Various	NAVAIR : Patuxent River, MD	0.020	0.000		0.000		0.000		-		0.000	0.000	0.020	-
Program Management Support - MISC	Various	NAWCAD : Patuxent River, MD	0.175	0.078	Oct 2017	0.000		0.000		-		0.000	0.000	0.253	-
		Subtotal	0.195	0.078		0.000		0.000		-		0.000	0.000	0.273	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 2069 / *F/A-18 Infrared Search and Track (IRST)*	

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	94.094	0.078		0.000		0.000		-		0.000	0.000	94.172	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2069 / *F/A-18 Infrared Search and Track (IRST)*



2020OSD - 0204136N - 2069

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2069 / *F/A-18 Infrared Search and Track (IRST)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Infra-Red Search and Track				
System Development: Engineering and Manufacturing Development: King Air Integration Lab Block II Phase I	2	2018	3	2018
System Development: Engineering and Manufacturing Development: IRST OFP SW B1	1	2018	1	2018
System Development: Engineering and Manufacturing Development: IRST OFP SW B2	2	2018	4	2018
System Development: Reviews: Physical Configuration Audit (PCA)	1	2018	1	2018
Test and Evaluation: Integration Testing: SCS H14 Integration Testing	1	2018	1	2018
Test and Evaluation: Integration Testing: SCS H16 Integration Testing	1	2018	4	2018
Test and Evaluation: Operational Testing: SCS H14 Integrated Operational Test & Evaluation (IOT&E)	2	2018	4	2018
Test and Evaluation: Operational Testing: SCS H14 OT Assist	2	2018	4	2018
Production Milestones: Block II Prototype Test Assets (RDTE)	1	2018	1	2018
Production Milestones: Block II EDM Test Assets (RDTE)	2	2018	2	2018

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 2071 / *F/A-18 Block III*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
2071: *F/A-18 Block III*	0.000	57.462	83.146	87.998	-	87.998	30.001	0.000	0.000	0.000	0.000	258.607
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

F/A-18 Block III is a series of several of Engineering Change Proposals (ECPs) that bring planned upgrades to the F/A-18E/F. The combined impact of these upgrades brings significant capability to the aircraft. Block III is a follow-on to Block II upgrades. The FY 2020 budget request funds Non-Recurring Engineering (NRE) for these ECPs which include Advanced Network Architecture, aircraft Signature Enhancements, Advanced Cockpit Displays, and Conformal Fuel Tanks.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: F/A-18 Block III	57.462	83.146	87.998	0.000	87.998
Articles:	-	-	-	-	-

Description: Block III Super Hornet upgrades provide additional capability to the aircraft and its contribution to the Airwing are significant. The capability upgrades consist of several Engineering Change Proposals (ECPs) which will be incorporated in the near term with a combination of forward fit production line incorporation and via retrofit modifications to the aircraft already planned as part of the Service Life Modification (SLM) Plan. The FY 2020 budget request funds Non-Recurring (NRE) for these ECPs.

FY 2019 Plans:

F/A-18 Block III is a series of several of Engineering Change Proposals (ECPs) that bring several planned upgrades to the F/A-18E/F aircraft. The combined impact of these upgrades brings significant capability to the aircraft. The FY19 budget request funds the Non-Recurring (NRE) needed for these ECPs. F/A Block III flight testing will have significant increase in flight testing in FY2019 for advance cockpit, and conformal fuel tank.

FY 2020 Base Plans:

F/A-18 Block III is a series of several of Engineering Change Proposals (ECPs) that bring planned upgrades to the F/A-18E/F aircraft. The combined impact of these upgrades brings significant capability to the aircraft. The FY 2020 budget request funds the Non-Recurring (NRE) needed for these ECPs. F/A Block III flight testing will have significant increase in flight testing in FY 2020 for Conformal Fuel Tank development.

FY 2020 OCO Plans:

N/A

FY 2019 to FY 2020 Increase/Decrease Statement:

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2071 / *F/A-18 Block III*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
The FY 2020 funding request was increased by $4.856 million for Block III Conformal Fuel Tank (CFT) flight test support. The initial F/A-18 Block III concept includes low risk changes which can be incorporated in the near term with a combination of forward fit production line incorporation and via retrofit modifications to the aircraft already planned as part of the Service Life Modification (SLM) Plan. The FY19 budget request funded Non-Recurring (NRE) for these ECPs.					
Accomplishments/Planned Programs Subtotals	57.462	83.146	87.998	0.000	87.998

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• APN/0525: *F-18 Series*	1,007.030	1,159.675	1,227.089	-	1,227.089	1,293.248	1,502.252	1,936.725	1,898.026	7,770.655	27,479.309
• APN/0145: *FA-18E/F*	1,826.192	1,922.275	1,802.911	-	1,802.911	1,780.868	1,186.989	1,216.228	1,246.678	0.000	55,994.869

Remarks

D. Acquisition Strategy

A series of Block III Engineering Change Proposals (ECPs) will be incorporated into production aircraft starting in FY 2019. The ECPs will provide capability upgrades to Block II aircraft to give them Block III capabilities. Block II Fleet aircraft (Lots 26 and up) will receive capability upgrades when inducted for Service Life Modification (SLM) events.

E. Performance Metrics

The FY 2020 budget request funds the Non-Recurring Engineering (NRE) for the Block III Engineering Change Proposals (ECPs) that will provide upgraded capabilities to the F/A-18 E/F aircraft. Block III capability upgrades is planned to be incorporated into the aircraft on the production line starting with the FY19 procurement. Block II aircraft will receive the Block III ECPs when the aircraft are inducted for Service Life Modification (SLM) events.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2071 / *F/A-18 Block III*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Block III primary development	Various	Boeing : St Louis, MO	0.000	49.077	Dec 2017	70.819	Dec 2018	74.322	Dec 2019	-		74.322	26.313	220.531	220.535
		Subtotal	0.000	49.077		70.819		74.322		-		74.322	26.313	220.531	N/A

Remarks

Increase in funding in FY19 is due to flight testing of Conformal Fuel Tanks (CFTs) and Advanced Cockpit Systems for Block III F/A-18E/F aircraft.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support (AD)	WR	NAWCAD : Pax River, MD	0.000	0.750	Dec 2017	10.088	Dec 2018	11.393	Dec 2019	-		11.393	2.980	25.211	-
Development Support (WD)	WR	NAWCWD : China Lake, CA	0.000	2.736	Dec 2017	2.096	Dec 2018	2.138	Dec 2019	-		2.138	0.565	7.535	-
BLK III Price Fighters	WR	NAVSUP : Philadelphia, PA	0.000	0.079	Dec 2017	0.000		0.000		-		0.000	0.000	0.079	-
		Subtotal	0.000	3.565		12.184		13.531		-		13.531	3.545	32.825	N/A

Remarks

FY 2019 and FY 2020 increase funds Block III CFT flight test support.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation (NASA)	MIPR	NASA : Moffett Field, CA	0.000	4.317	Mar 2018	0.000		0.000		-		0.000	0.000	4.317	-
Test & Evaluation (NASA)	MIPR	NASA : Langley, VA	0.000	0.363	Jun 2018	0.000		0.000		-		0.000	0.000	0.363	-
		Subtotal	0.000	4.680		0.000		0.000		-		0.000	0.000	4.680	N/A

Remarks

Wind Tunnel Testing.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 2071 / *F/A-18 Block III*	

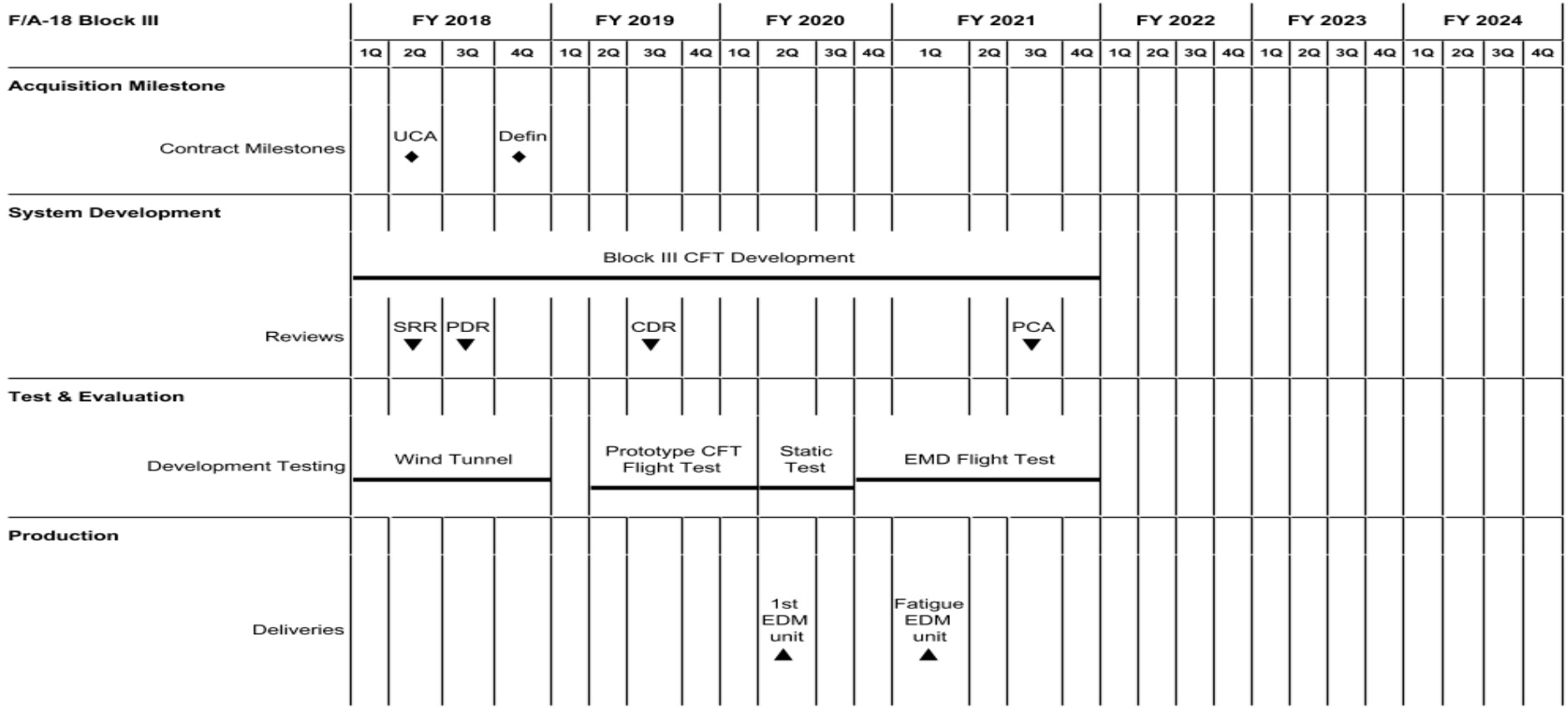
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Seaport CSS	C/CPFF	Ausley : Pax River, MD	0.000	0.140	Jan 2018	0.143	Dec 2018	0.145	Dec 2019	-		0.145	0.148	0.576	0.576
		Subtotal	0.000	0.140		0.143		0.145		-		0.145	0.148	0.576	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	57.462		83.146		87.998		-		87.998	30.006	258.612	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2071 / *F/A-18 Block III*



2020DON - 0204136N - 2071

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 2071 / *F/A-18 Block III*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
F/A-18 Block III				
Acquisition Milestone: Contract Milestones: UCA	2	2018	2	2018
Acquisition Milestone: Contract Milestones: DEFIN	4	2018	4	2018
System Development: Block III CFT Development	1	2018	4	2021
System Development: Reviews: System Requirements Review	2	2018	2	2018
System Development: Reviews: Preliminary Design Review	3	2018	3	2018
System Development: Reviews: Critical Design Review	3	2019	3	2019
System Development: Reviews: Physical Configuration Audit	3	2021	3	2021
Test & Evaluation: Development Testing: Wind Tunnel Testing	1	2018	4	2018
Test & Evaluation: Development Testing: Prototype CFT Flight Test	2	2019	1	2020
Test & Evaluation: Development Testing: Static Test	2	2020	3	2020
Test & Evaluation: Development Testing: EMD Flight Test	4	2020	4	2021
Production: Deliveries: 1st EDM unit	2	2020	2	2020
Production: Deliveries: Fatigue EDM unit	1	2021	1	2021

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	0.000	11.800	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	11.800
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

1) Noise Reduction: Research, Development, Test and Evaluation (RDT&E) funding to support the redesign of Chevron seals to reduce engine exhaust plume noise. Numerous solutions have been evaluated. Chevron seals were determined to be the favorable solution for the F/A-18 and EA-18G. Previous testing of F414 chevrons demonstrated satisfactory noise reduction up to 80% power, but did not satisfy noise reduction requirements at full power. A possible cause of this problem has been identified. There are re-design options available to sustain noise reduction up to full power. Additional development and test will be required to finalize the Chevron design to achieve the desired noise reduction at all power levels. The subject funding will support the initial development efforts.

2) Navy Joint Air-to-Ground Missile for Fixed Wing Aircraft(JAGM-F) - Research, Development, Test and Evaluation (RDT&E) funding to support the initial integration efforts for the next generation of air-to-ground missile onto the F/A18E/F aircraft. The JAGM-F missile test and evaluation efforts are being conducted to ensure missile compatibility with the Navy environment and to confirm the performance of the missile meets mission requirements. The JAGM-F will build on the SDB II Unique Armament Interface integration efforts that are currently underway on the F/A-18E/F.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019
Congressional Add: Noise Reduction ***FY 2018 Accomplishments:*** N/A ***FY 2019 Plans:*** Funding provides for initial platform integration efforts on DoN platforms, including fit checks, ground launch eject testing, F/A-18 wind tunnel testing, F/A-18 strength/loads/Noise Vibe/Flutter analysis, and software integration lab tests of the JAGM-F electrical interface.	0.000	2.000
Congressional Add: Navy Joint Air-to-Ground Missile for Fixed Wing Aircraft ***FY 2018 Accomplishments:*** N/A ***FY 2019 Plans:*** Funding provides design and development efforts to redesign Chevron seals.	0.000	9.800
Congressional Adds Subtotals	0.000	11.800

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 9999 / *Congressional Adds*

D. Acquisition Strategy

1) Noise Reduction: Noise Reduction development and test is require to study the Chevron design to achieve the desired noise reduction at all power levels.

2) Navy Joint Air-to-Ground Missile for Fixed Wing Aircraft(JAGM-F). JAGM-F is being developed for the rotary wing AGM variant, and includes development necessary to be compatible with DoN and USAF fixed wing aircraft. The DoN and USAF integration and test activities will inform the DoN's acquisition approach for JAGM as a potential successor for the DoN's aging MAVERICK program.

E. Performance Metrics

1) Noise Reduction: Redesign of Chevron seals to reduce engine exhaust plume noise

2) Navy Joint Air-to-Ground Missile for Fixed Wing Aircraft(JAGM-F). Pursue initial platform integration efforts on DoN platforms, including fit checks, ground launch eject testing, F/A-18 wind tunnel testing, F/A-18 strength/loads/Noise Vibe/Flutter analysis, software integration lab tests of the JAGM-F electrical interface, and IMV flights.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204136N / *F/A-18 Squadrons*	Project (Number/Name) 9999 / *Congressional Adds*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Noise Reduction	C/CPFF	GE Aviation : Lynn, Massachusetts	0.000	0.000		2.000	Jun 2019	0.000		-		0.000	0.000	2.000	2.000
		Subtotal	0.000	0.000		2.000		0.000		-		0.000	0.000	2.000	N/A

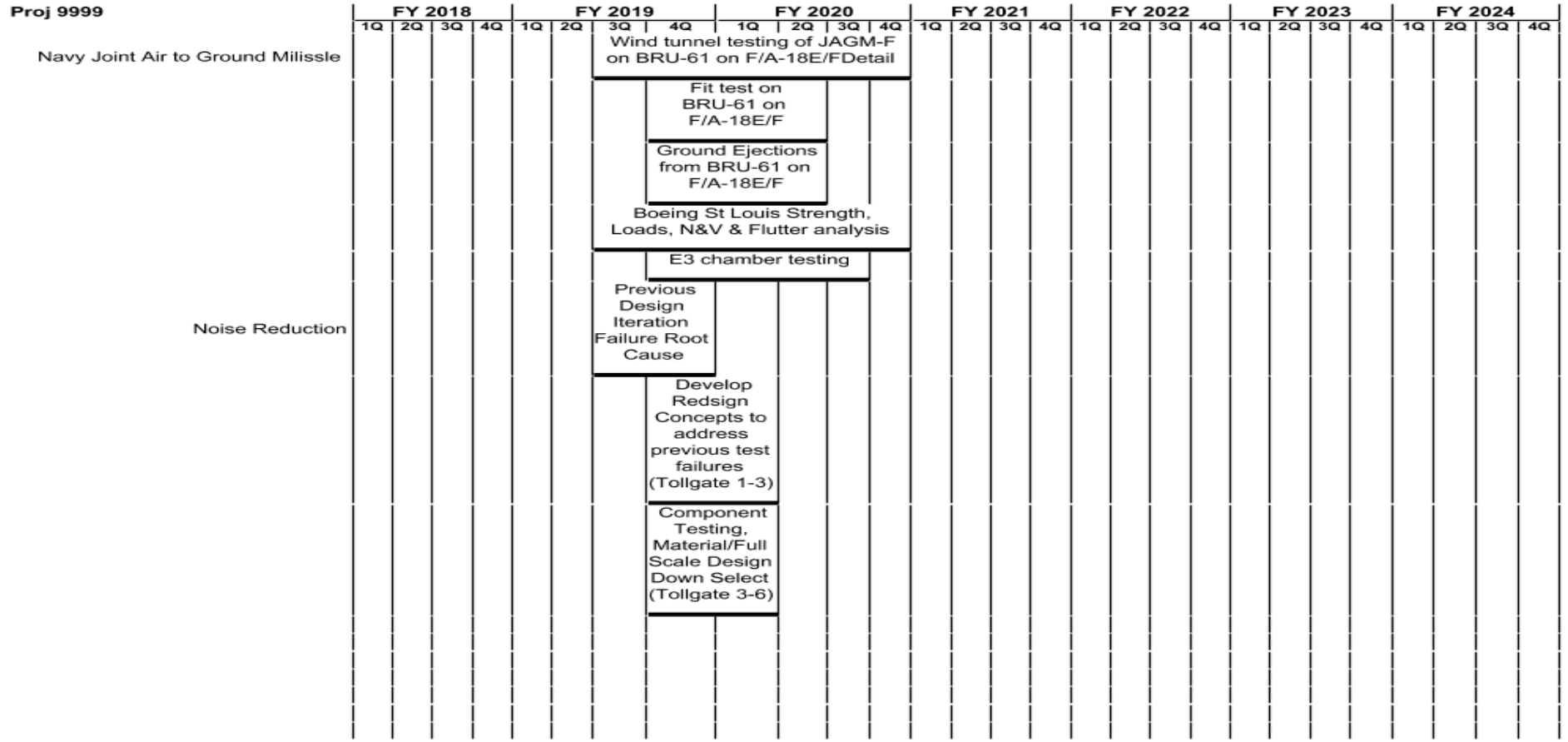
Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Wind tunnel testing of JAGM-F on BRU-61 on F/A-18E/Fxt	WR	NAWC / Boeing : Not Specified	0.000	0.000		6.630	Oct 2019	0.000		-		0.000	0.000	6.630	6.630
Fit test on BRU-61 on F/A-18E/F	WR	NAWC : Not Specified	0.000	0.000		0.010	Jan 2019	0.000		-		0.000	0.000	0.010	0.010
Ground Ejections from BRU-61 on F/A-18E/F	WR	NAWC / Boeing : Not Specified	0.000	0.000		0.160	Jan 2019	0.000		-		0.000	0.000	0.160	0.160
Strength, Loads, N&V & Flutter analysis	PO	Boeing : Not Specified	0.000	0.000		1.500	Oct 2019	0.000		-		0.000	0.000	1.500	1.500
E3 chamber testing	WR	NAWC : Not Specified	0.000	0.000		1.500	Oct 2019	0.000		-		0.000	0.000	1.500	1.500
		Subtotal	0.000	0.000		9.800		0.000		-		0.000	0.000	9.800	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		11.800		0.000		-		0.000	0.000	11.800	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 9999 / *Congressional Adds*



2020PB - 0204136N - 9999

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204136N / *F/A-18 Squadrons*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9999				
Navy Joint Air to Ground Milissle: Wind tunnel testing of JAGM-F on BRU-61 on F/A-18E/FDetail	3	2019	4	2020
Navy Joint Air to Ground Milissle: Fit test on BRU-61 on F/A-18E/F	4	2019	2	2020
Navy Joint Air to Ground Milissle: Ground Ejections from BRU-61 on F/A-18E/F	4	2019	2	2020
Navy Joint Air to Ground Milissle: Boeing St Louis Strength, Loads, N&V & Flutter analysis	3	2019	4	2020
Navy Joint Air to Ground Milissle: E3 chamber testing	4	2019	3	2020
Noise Reduction: Previous Design Iteration Failure Root Cause	3	2019	4	2019
Noise Reduction: Develop Redsign Concepts to address previous test failures (Tollgate 1-3)	4	2019	1	2020
Noise Reduction: Component Testing, Material/Full Scale Design Down Select (Tollgate 3-6)	4	2019	1	2020