Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0205633N *I Aviation Improvements*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	1,338.992	121.138	119.099	121.805	-	121.805	127.327	121.266	120.453	124.357	Continuing	Continuing
0601: *Acft Handling & Service Equip*	31.486	2.619	2.722	4.868	-	4.868	6.778	3.093	2.748	4.804	Continuing	Continuing
0852: *Consolidated Auto Support System*	161.389	6.308	6.661	6.734	-	6.734	6.539	6.638	6.762	6.915	Continuing	Continuing
1041: *Acft Equip Repl/Maint Prog*	49.999	8.223	3.356	3.369	-	3.369	3.433	3.517	3.583	3.654	Continuing	Continuing
1355: *Propulsion and Power Component Improvement Program*	1,054.223	89.303	94.001	105.223	-	105.223	108.500	107.164	107.355	108.984	Continuing	Continuing
2269: *Expeditionary Airfield Improvements*	41.895	14.685	12.359	1.611	-	1.611	2.077	0.854	0.005	0.000	0.000	73.486

A. Mission Description and Budget Item Justification

Project 0601 - Common Ground Equipment is a Naval Aviation Project to apply new technology to common support equipment necessary to support multiple aircraft.

Project 0852: Consolidated Automated Support System is a standardized Automated Test Equipment with computer assisted, multi-function capabilities to support the maintenance of aircraft weapons systems and missiles.

Project 1041 - Aircraft Equipment Reliability/Maintainability Improvement Program is the only Navy program that provides engineering support for in-service out-of-production aircraft equipment, and provides increased readiness at reduced operational and support cost.

Project 1355 - Aircraft Engine Component Improvement Program develops reliability and maintainability and safety enhancements for in-service Navy aircraft engines, transmissions, propellers, starters, auxiliary power units, electrical generating systems, fuel systems, fuels, and lubricants.

Project 2269 - The Expeditionary Airfields (EAF) program designs, develops, tests and fields a sustainment lighting system to replace existing obsolete legacy EAF lighting system.

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy					Date: February 2018
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*		R-1 Program Element (Number/Name) PE 0205633N *I Aviation Improvements*			
B. Program Change Summary ($ in Millions)	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**
Previous President's Budget	120.861	119.099	122.717	-	122.717
Current President's Budget	121.138	119.099	121.805	-	121.805
Total Adjustments	0.277	0.000	-0.912	-	-0.912
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	4.999	0.000			
• SBIR/STTR Transfer	-2.714	0.000			
• Program Adjustments	0.000	0.000	-1.036	-	-1.036
• Rate/Misc Adjustments	0.000	0.000	0.124	-	0.124
• Congressional General Reductions Adjustments	-0.008	-	-	-	-
• Congressional Directed Reductions Adjustments	-2.000	-	-	-	-

Change Summary Explanation

The FY 2019 funding request was reduced by $5.459 million to account for the availability of prior year execution balances.

The FY 2019 funding request was reduced by $0.674 million to reflect the Department of Navy's effort to support the Office of Management and Budget directed reforms for Efficiency and Effectiveness that include a lean, accountable, more efficient government.

Schedule:

Project 0601: Name change from Carrier Crash Crane (CV) to Carrier/Amphibious Assault Ship Crash Crane (CV/AACC) due to adding the amphibious assault ship back to the procurement. CV/AACC Milestone C shifted left from 1st quarter FY22 to 1st quarter FY21 and FRPDR was added 2nd quarter FY22 reflecting the current acquisition strategy. Aircraft Spotting Dolly (ASD) was moved to non-development program due to Commercial Off-The-Shelf (COTS) availability; removed contractor/government test and Milestone C from program schedule. Standard PEMA Cyber Solution (SPECS) POM 19 funded FY19 through FY21 with deliveries completing in FY22; program schedule added to budget.

Project 0852: The Third-Generation Electro-Optics (EO3) Technology Development project develops, integrates, and tests solutions to resolve EO3 obsolescence issues to enable sustained maintenance and repair capabilities for the F/A-18 ATFLIR and H-60 MTS weapons systems. The Test Technology

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy	Date: February 2018
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0205633N *I Aviation Improvements*

Development project includes development of technical solutions to meet emerging weapons system testing requirements and to resolve other imminent Automated Test Equipment (ATE) obsolescence issues, including the Inertial Device Test Set (IDTS), the next-generation Electro-Optical (EO) subsystem, and other eCASS test system modernization requirements.

Project 2269: The Sustainment Lighting System (SLS) program experienced a six month slip to MS C caused by the delay in the Critical Design Review (CDR) due to design changes and system maturity concerns which delayed the delivery of required drawings and CDRLs required for CDR. Critical Design Review (CDR) moved from 2nd Quarter FY 2017 to 4th Quarter FY 2017. Test Readiness Review (TRR) moved from 3rd Quarter FY 2017 to 1st Quarter FY 2018. Developmental Test & Evaluation (DT&E) start moved from 3rd Quarter FY 2017 to 1st Quarter 2018. Operational Test Readiness Review (OTRR) moved from 4th Quarter FY 2018 to 2nd Quarter FY 2019. Milestone C moved from 2nd Quarter FY 2019 to 4th Quarter FY 2019. Production milestone for Full Rate Production Lot 1 and IOC moved from 4th Quarter FY 2019 to 2nd Quarter FY 2020.

Technical: Not Applicable.

NOTE: The 5K in FY22 of PU 2269 belongs in PU 1355.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 0601 / *Acft Handling & Service Equip*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
0601: *Acft Handling & Service Equip*	31.486	2.619	2.722	4.868	-	4.868	6.778	3.093	2.748	4.804	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Common Ground Equipment is a Naval Aviation project to apply new technology to common support equipment necessary to support multiple systems/aircraft within the Navy. The common support equipment items developed with this budget are briefed to the Air Force, Army and Coast Guard for possible use in joint procurement in the production phase.

New programs are Turbo Shaft Engine Dynamometer Technology Development and Borescope Technology Development in FY18. Turbo Shaft Engine Dynamometer Technology Development involves efforts to develop a next generation ability to test the latest T700 engine's which will require higher torque levels than are currently available. Borescope Technology Development is to identify ways to increase availability and reliability of the current generation of borescopes that will become unsupportable as the manufacturer will stop support by FY22.

Funding supports the evaluation, testing and integration to develop Portable Electronic Maintenance Aids (PEMA) Commercial Off the Shelf solution for portable device deployments across the Naval Aviation Enterprise. PEMA is a portable device utilized by maintainers with the implementation of digital maintenance capabilities (digital publications, Interactive Electronic Technical Manuals, Internet Protocol based data uploads, Binary digit data downloads, automated diagnostics, and planeside Naval Aviation Logistics Command/Management Information System. PEMAs are a mandatory display device supporting modern day Automated Maintenance Environment implemented for weapon systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Turbo Shaft Engine Dynamometer Technology Development	0.000	0.575	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Develop, integrate, and evolve dynamometer technologies and capabilities for insertion into testing of turbo shaft engines. Current V35 dynamometer used to test T700 engines at the intermediate maintenance level has obsolescence issues and worn components that have been overhauled three times since initial fielding in the 1980s. The OEM has stated that it does not recommend a fourth overhaul due to structural issues. Insertion of new dynamometer technologies is required to test next generation T700 engines with increased torque and horsepower and to retire legacy units which have tired metal due to cycle fatigue.					
FY 2018 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Perform market research of various dynamometer technologies needed to meet current and emergent T700 engine performance requirements. Evaluate dynamometer technology alternative solutions and perform analysis of alternatives to support development of an acquisition strategy for technology insertion and legacy dynamometer replacement. Develop requirements documents and procurement plan. ***FY 2019 Base Plans:*** N/A ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease of $-0.575M from FY2018 to FY2019 due to change in acquisition strategy.					
Title: Borescope Technology Development	0.000	0.483	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Develop, integrate, and evolve borescope technologies to meet emergent jet engine inspection requirements. Current fielded engine borescopes are unable to measure required defects on aircraft turbine engine compressor blades to the accuracy required. Additionally, current legacy borescopes will not be supported by the original equipment manufacturer beyond FY22. Legacy borescopes are susceptible to damage due to the insertion tube not being detachable/removable. A detachable insertion tube would increase system availability and reduce repair costs. New borescope technology is needed to improve defect measurement accuracy and equipment supportability. ***FY 2018 Plans:*** Perform market research of various borescope technologies needed to meet current and emergent engine inspection requirements. Evaluate borescope technology alternative solutions and perform analysis of alternatives to support development of an acquisition strategy for technology insertion and legacy borescope replacement. Develop requirements documents and procurement plan. ***FY 2019 Base Plans:*** N/A ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Decrease of $-0.483M from FY2018 to FY2019 due to non-availability of funds to complete analysis and market research to determine acquisition strategy.					
Title: Aircraft Spotting Dolly (ASD) ***Articles:*** ***Description:*** There are no commercially available towing vehicles that could even be modified to replace the capabilities of the present SD-2. An R & D effort will be required to design its replacement. Advances in batteries and alternating current motor drive systems in the past decade have made it feasible to design an electrically powered vehicle for the CV, CVN, and L-Class hanger deck spotting missions. Such a vehicle will be inherently more reliable, reduce maintenance, and eliminate the fumes and noise generated by a diesel engine. An electrically driven vehicle will provide much greater motion control for slow speeds to aid in the engagement to the aircraft nose gear. Proximity sensors will be incorporated to automatically stop the spotting dolly prior to accidental impact with the aircraft, other support equipment or bulkheads, increasing the safety of the spotting operations. The legacy ASD is close to thirty years old and experiencing parts obsolescence issues and general efficiency degradation. ***FY 2018 Plans:*** Moved to non-development program due to Commercial Off The Shelf (COTS) availability. ***FY 2019 Base Plans:*** N/A ***FY 2019 OCO Plans:*** N/A	0.261 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: Standard PEMA Cyber Solution (SPECS) ***Articles:*** ***Description:*** Capability/Program Description: The Portable Electronic Maintenance Aid (PEMA) Cyber Risk Assessment (CRA) has identified cyber vulnerabilities that could be exploited to threaten US fighting forces. Implementation of mandatory Cyber Security (CS) requirements would decrease the CS attack surface. Develop Standard PEMA Cyber Solution (SPECS) architecture for all PEMAs to standardize software across NAE, leverage existing enterprise tools, and to correct cyber shortfalls identified by the Cyber Warfare Detachment (CWD) Cyber Risk Assessment (CRA). Implement CS enhancements to reduce risk from cyber-attack. ***FY 2018 Plans:***	0.000 -	0.000 -	1.974 -	0.000 -	1.974 -

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A ***FY 2019 Base Plans:*** Develop Standard PEMA Cyber Solution (SPECS) core software solution enhancements to correct cyber shortfalls, develop/enhance Enterprise products (CMDS, PREP, and CFE) for software standardization across NAE, and develop/integrate T/M/S unique applications to be hosted on a common image. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of $1.974M from FY2018 to FY2019 is due to the funding of POM 19 Issue # 50149 FRCFT Initiative 7 - Standard PEMA Cyber Solution (SPECS).					
Title: Carrier/Amphibious Assault Ship Crash Crane (CV/AACC) ***Articles:*** ***Description:*** Name change from Carrier Crash Crane (CV) to Carrier/Amphibious Assault Ship Crash Crane (CV/AACC) due to adding the amphibious assault ship back to the procurement. CV are required to remove damaged aircraft from the flight deck. In 2004, a solicitation for a commerical off the shelf replacement for the existing shipboard crash crane was issued. Two bids were received, and after a complete evaluation with many rounds of discussions with the companies bidding, both proposals were found to be technically inadequate and the procurement effort was discontinued. As a result, the crash cranes have continued operation unchanged. Designed in the late 1980's, major systems are beginning to experience the obsolescence of spare parts and are in need of updating. R&D resources are needed to identify not only replacements, but new technologies, which can increase the reliability and maintainability of this flight ops critical piece of equipment. Systems updates would include the engine/generator and electrical updates to the motor drive/control system. An exploration of power sources other than diesel engines would be considered and a corrosion resistant boom. ***FY 2018 Plans:*** Prepare contract spec, RFP, SOW and prepare for source selection. ***FY 2019 Base Plans:*** Conduct Milestone B and award contract. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:***	1.663 -	0.964 -	2.194 -	0.000 -	2.194 -

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Increase of $1.23M from FY2018 to FY2019 due to Milestone B/Hardware Development Contract.					
Title: Portable Electronic Maintenance Aid (PEMA)	0.695	0.700	0.700	0.000	0.700
Articles:	-	-	-	-	-
Description: Portable Electronic Maintenance Aid (PEMA) funding supports the evaluation, testing and integration to develop PEMA Commercial Off-the-Shelf (COTS) solution for portable device deployments across the Naval Aviation Enterprise. PEMA is a portable device utilized by maintainers with the implementation of digital maintenance capabilities (digital publications, Interactive Electronic Technical Manuals, Internet Protocol based data uploads, Binary digit data downloads, automated diagnostics, and planeside Naval Aviation Logistic Command Management Information System. PEMAs are a mandatory display device supporting modern day Automated Maintenance Environment implemented for weapon systems. ***FY 2018 Plans:*** Evaluate, test and integrate evolving COTS solutions. Conduct test & evaluation of T/M/S peculiar software/ hardware requirements and network connectivity compliance across the GIG prior to deployment to the fleet by a yearly release cycle. ***FY 2019 Base Plans:*** Evaluate, test and integrate evolving COTS solutions. Conduct test & evaluation of T/M/S peculiar software/ hardware requirements and network connectivity compliance across the GIG prior to deployment to the fleet by a yearly release cycle. ***FY 2019 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	2.619	2.722	4.868	0.000	4.868

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APN/0705: *Ground Support Equipment - CSE/ICP*	83.215	84.915	109.892	-	109.892	94.764	92.124	93.745	92.036	Continuing	Continuing
• OPN/4268: *Aviation Support Equipment - PEMA*	6.651	12.909	11.885	-	11.885	10.988	13.313	12.646	12.909	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*

D. Acquisition Strategy

Common Ground Equipment: This is a non ACAT program. Field activities propose tentative projects. Internal panel merits and selects projects. Field activities develop projects and submit results. Operational Advisory Group process selects projects to transition to procurement.

Portable Electronic Maintenance Aids: The management approach includes the Program Management Office residing at NAVAIR with Milestone Decision Authority delegated to the Naval Air Systems Command Chief Information Officer. The evolutionary development approach will be used to execute requirements. Contracting for the prime integrator will be via competitively awarded Indefinite Delivery/Indefinite Quantity contracts.

E. Performance Metrics

Milestone Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 0601 / *Acft Handling & Service Equip*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Dev - CV	C/FFP	TBD : TBD	0.000	0.000		0.000		1.380	Jan 2019	-		1.380	0.000	1.380	1.380
Systems Engineering - ASD	WR	NAWCAD : LAKEHURST, NJ	0.961	0.161	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering - CV	WR	NAWCAD : LAKEHURST, NJ	1.501	1.663	Nov 2016	0.964	Nov 2017	0.814	Nov 2018	-		0.814	Continuing	Continuing	Continuing
Systems Engineering - Dynamometer	WR	NAWCAD : LAKEHURST, NJ	0.000	0.000		0.575	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering - Borescope	WR	NAWCAD : LAKEHURST	0.000	0.000		0.483	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering - SPECS	C/IDIQ	TBD : TBD	0.000	0.000		0.000		1.383	Dec 2018	-		1.383	0.000	1.383	1.383
Prior year Prod Dev cost no longer funded in the FYDP	Various	Various : Various	17.517	0.000		0.000		0.000		-		0.000	0.000	17.517	-
		Subtotal	19.979	1.824		2.022		3.577		-		3.577	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior year Support cost no longer funded in the FYDP	Various	Various : Various	8.857	0.000		0.000		0.000		-		0.000	0.000	8.857	-
		Subtotal	8.857	0.000		0.000		0.000		-		0.000	0.000	8.857	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational T & E - PEMA	WR	NAWCAD : PAX RIVER, MD	0.963	0.170	Nov 2016	0.425	Nov 2017	0.425	Nov 2018	-		0.425	Continuing	Continuing	Continuing
Operational T & E - PEMA	WR	FRC SE : Jacksonville, FL	0.551	0.525	Nov 2016	0.275	Nov 2017	0.275	Nov 2018	-		0.275	0.000	1.626	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 0601 / *Acft Handling & Service Equip*	

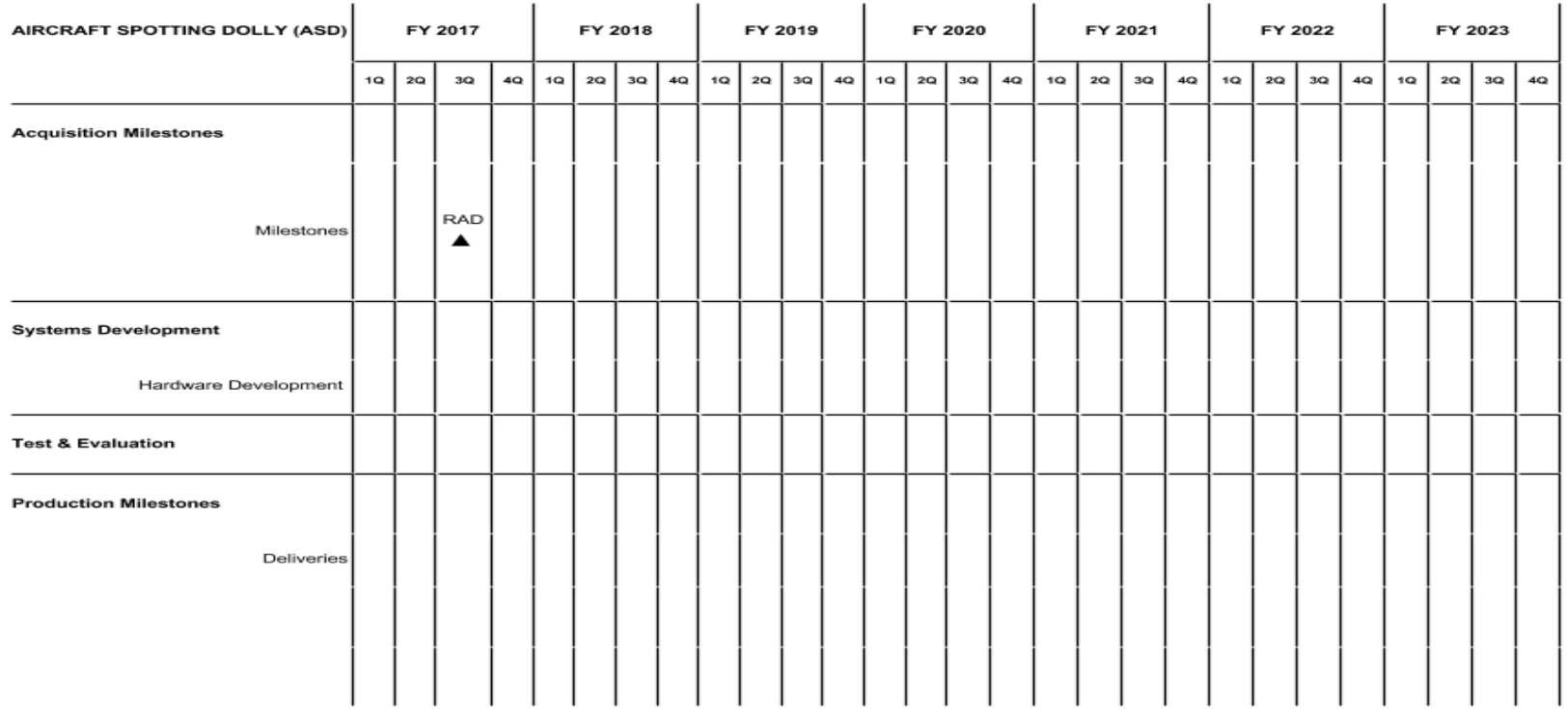
Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
C&G Test - ASD	WR	NAWCAD : PAX RIVER, MD	0.319	0.100	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
C&G Test - CV	WR	NAWCAD : PAX RIVER, MD	0.317	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Operational T & E - SPECS	WR	FRC SE : Jacksonville, FL	0.000	0.000		0.000		0.591	Dec 2018	-		0.591	0.000	0.591	-
Prior year T&E cost no longer funded in the FYDP	Various	Various : Various	0.500	0.000		0.000		0.000		-		0.000	0.000	0.500	-
		Subtotal	2.650	0.795		0.700		1.291		-		1.291	Continuing	Continuing	N/A

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	31.486	2.619		2.722		4.868		-		4.868	Continuing	Continuing	N/A

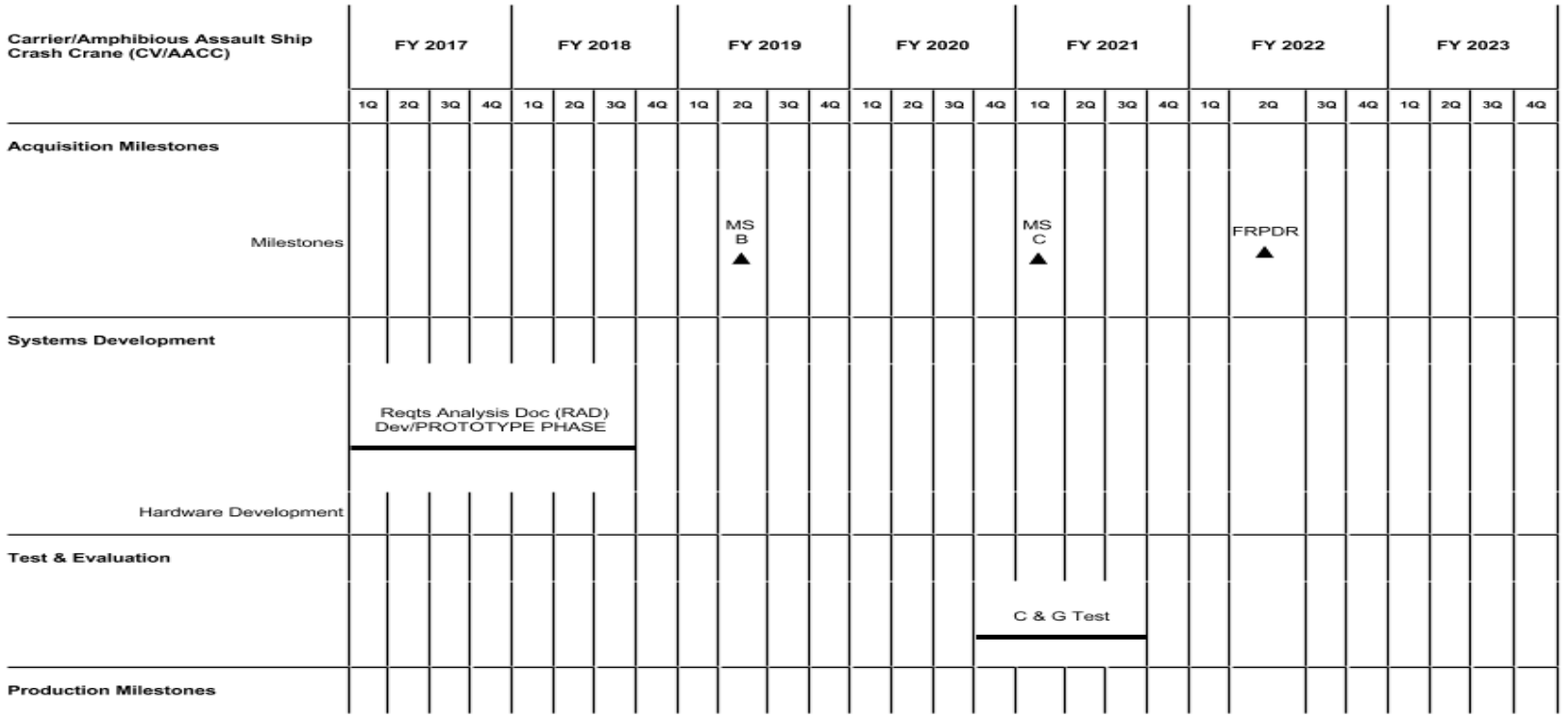
Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*



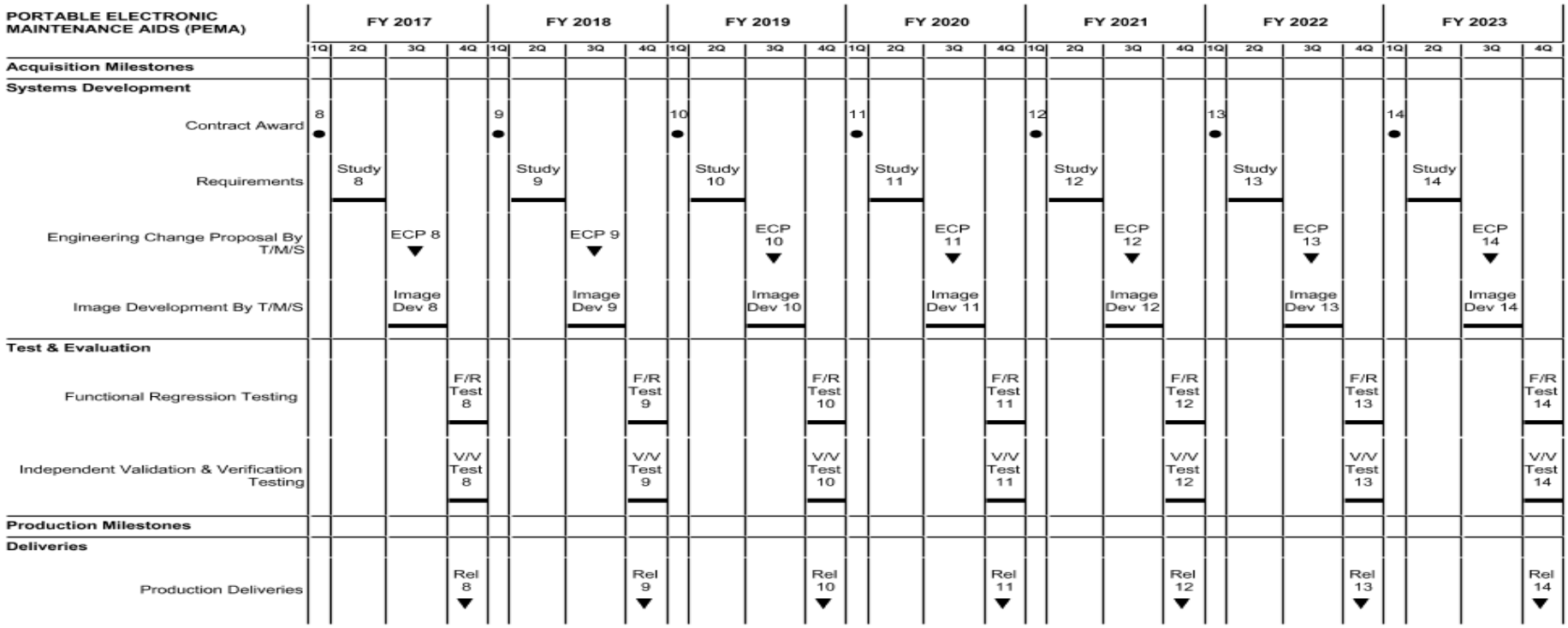
2019DON - 0205633N - 0601

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*



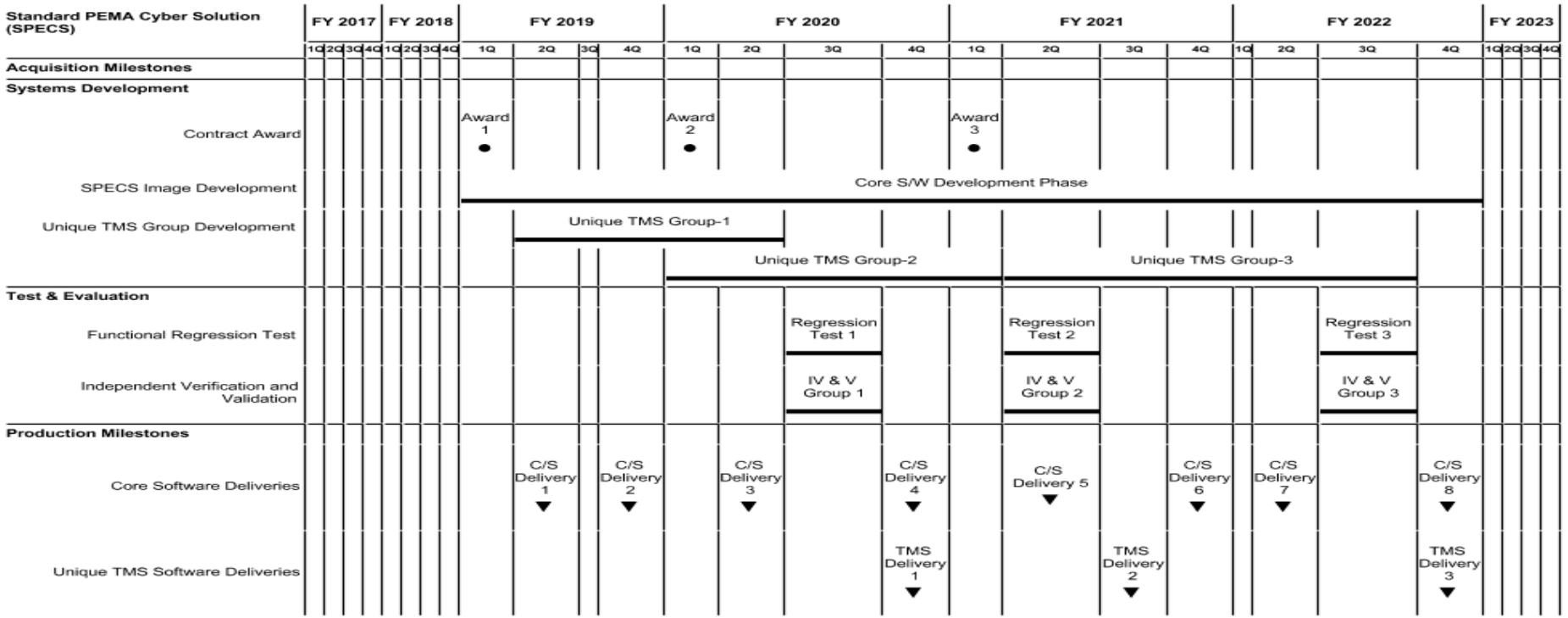
2019DON - 0205633N - 0601

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*



2019DON - 0205633N - 0601

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*



2019DON - 0205633N - 0601

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
AIRCRAFT SPOTTING DOLLY (ASD)				
Acquisition Milestones: Milestones: ASD-Reqts Analysis Doc (RAD)	3	2017	3	2017
Carrier/Amphibious Assault Ship Crash Crane (CV/AACC)				
Acquisition Milestones: Milestones: MILESTONE B	2	2019	2	2019
Acquisition Milestones: Milestones: MILESTONE C	1	2021	1	2021
Acquisition Milestones: Milestones: FRPDR	2	2022	2	2022
Systems Development: Hardware Development	1	2017	3	2018
Test & Evaluation: CV - CONTRACTOR AND GOVT RUN TESTING	4	2020	3	2021
PORTABLE ELECTRONIC MAINTENANCE AIDS (PEMA)				
Systems Development: Contract Award: Contract Award 8	1	2017	1	2017
Systems Development: Contract Award: Contract Award 9	1	2018	1	2018
Systems Development: Contract Award: Contract Award 10	1	2019	1	2019
Systems Development: Contract Award: Contract Award 11	1	2020	1	2020
Systems Development: Contract Award: Contract Award 12	1	2021	1	2021
Systems Development: Contract Award: Contract Award 13	1	2022	1	2022
Systems Development: Contract Award: Contract Award 14	1	2023	1	2023
Systems Development: Requirements: Requirements Study Complete 8	2	2017	2	2017
Systems Development: Requirements: Requirements Study Complete 9	2	2018	2	2018
Systems Development: Requirements: Requirements Study Complete 10	2	2019	2	2019
Systems Development: Requirements: Requirements Study Complete 11	2	2020	2	2020
Systems Development: Requirements: Requirements Study Complete 12	2	2021	2	2021
Systems Development: Requirements: Requirements Study Complete 13	2	2022	2	2022
Systems Development: Requirements: Requirements Study Complete 14	2	2023	2	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 8	3	2017	3	2017
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 9	3	2018	3	2018
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 10	3	2019	3	2019
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 11	3	2020	3	2020
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 12	3	2021	3	2021
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 13	3	2022	3	2022
Systems Development: Engineering Change Proposal By T/M/S: Engineering Change Proposal By T/M/S, ECP 14	3	2023	3	2023
Systems Development: Image Development By T/M/S: Image Development By T/M/S 8	3	2017	3	2017
Systems Development: Image Development By T/M/S: Image Development By T/M/S 9	3	2018	3	2018
Systems Development: Image Development By T/M/S: Image Development By T/M/S 10	3	2019	3	2019
Systems Development: Image Development By T/M/S: Image Development By T/M/S 11	3	2020	3	2020
Systems Development: Image Development By T/M/S: Image Development By T/M/S 12	3	2021	3	2021
Systems Development: Image Development By T/M/S: Image Development By T/M/S 13	3	2022	3	2022
Systems Development: Image Development By T/M/S: Image Development By T/M/S 14	3	2023	3	2023
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 8	4	2017	4	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 9	4	2018	4	2018
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 10	4	2019	4	2019
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 11	4	2020	4	2020
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 12	4	2021	4	2021
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 13	4	2022	4	2022
Test & Evaluation: Functional Regression Testing: Functional/Regression Testing 14	4	2023	4	2023
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 8	4	2017	4	2017
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 9	4	2018	4	2018
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 10	4	2019	4	2019
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 11	4	2020	4	2020
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 12	4	2021	4	2021
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 13	4	2022	4	2022
Test & Evaluation: Independent Validation & Verification Testing: Independent Validation & Verification Testing 14	4	2023	4	2023
Deliveries: Production Deliveries: Production Delivery, Release 8	4	2017	4	2017
Deliveries: Production Deliveries: Production Delivery, Release 9	4	2018	4	2018
Deliveries: Production Deliveries: Production Delivery, Release 10	4	2019	4	2019
Deliveries: Production Deliveries: Production Delivery, Release 11	4	2020	4	2020
Deliveries: Production Deliveries: Production Delivery, Release 12	4	2021	4	2021
Deliveries: Production Deliveries: Production Delivery, Release 13	4	2022	4	2022
Deliveries: Production Deliveries: Production Delivery, Release 14	4	2023	4	2023
Standard PEMA Cyber Solution (SPECS)				

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0601 / *Acft Handling & Service Equip*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Systems Development: Contract Award: Contract Award 1	1	2019	1	2019
Systems Development: Contract Award: Contract Award 2	1	2020	1	2020
Systems Development: Contract Award: Contract Award 3	1	2021	1	2021
Systems Development: SPECS Image Development: SPECS Image	1	2019	4	2022
Systems Development: Unique TMS Group Development: Unique TMS Group-1	2	2019	2	2020
Systems Development: Unique TMS Group Development: Unique TMS Group-2	1	2020	1	2021
Systems Development: Unique TMS Group Development: Unique TMS Group-3	2	2021	3	2022
Test & Evaluation: Functional Regression Test: Group 1	3	2020	3	2020
Test & Evaluation: Functional Regression Test: Group 2	2	2021	2	2021
Test & Evaluation: Functional Regression Test: Group 3	3	2022	3	2022
Test & Evaluation: Independent Verification and Validation: Group 1	3	2020	3	2020
Test & Evaluation: Independent Verification and Validation: Group 2	2	2021	2	2021
Test & Evaluation: Independent Verification and Validation: Group 3	3	2022	3	2022
Production Milestones: Core Software Deliveries: Deliveries 1	2	2019	2	2019
Production Milestones: Core Software Deliveries: Deliveries 2	4	2019	4	2019
Production Milestones: Core Software Deliveries: Deliveries 3	2	2020	2	2020
Production Milestones: Core Software Deliveries: Deliveries 4	4	2020	4	2020
Production Milestones: Core Software Deliveries: Deliveries 5	2	2021	2	2021
Production Milestones: Core Software Deliveries: Deliveries 6	4	2021	4	2021
Production Milestones: Core Software Deliveries: Deliveries 7	2	2022	2	2022
Production Milestones: Core Software Deliveries: Deliveries 8	4	2022	4	2022
Production Milestones: Unique TMS Software Deliveries: Deliveries 1	4	2020	4	2020
Production Milestones: Unique TMS Software Deliveries: Deliveries 2	3	2021	3	2021
Production Milestones: Unique TMS Software Deliveries: Deliveries 3	4	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 0852 / *Consolidated Auto Support System*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
0852: *Consolidated Auto Support System*	161.389	6.308	6.661	6.734	-	6.734	6.539	6.638	6.762	6.915	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The electronic Consolidated Automated Support System (eCASS) project is the system design and development of the latest generation of the US Navy's CASS family of automatic test systems. The legacy CASS system was designed and developed in the 1980's and commenced fielding in 1992. As such, it is reaching the end of its useful life due to obsolescence issues. eCASS is the replacement system for legacy CASS systems, which provides Naval aircraft avionics component maintenance and repair support at Intermediate and Depot maintenance facilities both shore-based and afloat. As a CASS replacement program, the eCASS program objectives remain the same as that of CASS. Specifically: (1) increase material readiness; (2) reduce life cycle costs; (3) improve tester sustainability at depot and intermediate maintenance levels; (4) reduce proliferation of unique test equipment, and (5) provide test capability for existing and emerging avionics/electronics aircraft weapon systems.

The Test Technology Development project includes analysis, application, maturation, integration and testing of emerging electronic, mechanical and optical test technologies for potential military utility in support of Naval avionics testing and repair. Specifically included are next generation electro-optics, synthetic instruments, high-speed bus and inertial device technologies, and various other modernization elements for the CASS family of automatic test systems.

The Third Generation Electro-Optical (EO3) Technology Development project consists of the design and development of technology solutions, including a near-infrared camera solution to replace the existing obsolete EO3 console camera, for use in 65 fielded Navy test systems at both shore-based and afloat sites. The EO3 console subsystem is hosted by the US Navy Consolidated Automated Support System (CASS/eCASS) family of automatic test systems and is used to test, diagnose and repair the H-60 Multi-spectral Targeting System (MTS) and F/A-18 Advanced Targeting Forward Looking Infrared (ATFLIR) weapon systems. The objective of the EO3 Technology Development project is to extend the useful life of fielded EO3 systems in order to sustain H-60 MTS and F/A-18 ATFLIR weapon system readiness until a next-generation EO replacement system can be designed, developed, produced, and fielded.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: eCASS Development	3.523	0.316	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Develop, integrate and test an Automatic Test System (ATS) to replace legacy CASS systems. The new ATS will be compatible with and capable of hosting the hundreds of existing Test Programs that are currently utilized on legacy CASS at the Intermediate and Depot levels of maintenance, as well as any emerging Test Programs that may require greater test capability than provided by legacy CASS.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0852 / *Consolidated Auto Support System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2018 Plans: Close-out activities of System Development & Demonstration Contract ***FY 2019 Base Plans:*** N/A ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease of $0.316M from FY2018 to FY2019 is due to completion of developmental tasks for the program.					
Title: Test Technology Development	2.785	2.382	2.380	0.000	2.380
Articles:	-	-	-	-	-
Description: Develops, integrates, and evolves enhanced test capabilities and technologies for insertion into the Consolidated Automated Support System (CASS) family of test systems. As weapon system electronics evolve, new test capabilities are required to support advanced systems. Existing test capabilities must be extended in range, accuracy, time and frequency domains in order to sustain the required test accuracy ratios for weapon systems support (the automatic test system must be four times as accurate as the asset being tested). ***FY 2018 Plans:*** Develop, integrate, and evolve enhanced test capabilities and technologies for insertion into the CASS family of test systems with an increased focus on development of advanced electro-optics and inertial device capabilities. Analyze weapons system performance requirements against available technologies, prepare and refine System Performance Specifications for inclusion within Requests for Proposals to enable contracting for development of advanced systems to support emerging weapons system requirements. ***FY 2019 Base Plans:*** Release requests for proposals and evaluate proposed solutions for next-generation electro-optics test system development and for inertial device and global positioning system test system development contracts. Continually evaluate emerging weapons system requirements to ensure the latest weapons system requirements are captured within the planned test system developmental contract award. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0852 / *Consolidated Auto Support System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Decrease of $0.002M from FY2018 to FY2019 is rounding.					
Title: EO3 Technology Development	0.000	3.963	4.354	0.000	4.354
Articles:	-	2	-	-	-
Description: This project will develop, integrate and test technical solutions to resolve EO3 obsolescence issues, including a near infrared camera, that are capable of supporting the maintenance and repair of the F/A-18 ATFLIR and H-60 MTS weapon systems. ***FY 2018 Plans:*** Integrate two prototype near infrared camera assemblies into the EO3 system. Perform EO3 system design verification testing against the system specification requirements for compliance. Research and analyze solutions for other EO3 obsolescence resolution requirements. ***FY 2019 Base Plans:*** Test and evaluate interoperability of two prototype near infrared camera assemblies with the existing Test Program Sets and the eCASS EO3 system to verify compatibility. Perform an EO3 system technical evaluation to determine that the near IR camera solution is reliable and maintainable. Research and analyze solutions for other EO3 obsolescence issues in order to extend the EO3 service life until a modernized EO replacement system can be developed and fielded. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of $0.391M from FY2018 to FY2019 is due to increase in development activities for Engineering Change Proposals (ECP) to resolve obsolescence issues.					
Accomplishments/Planned Programs Subtotals	6.308	6.661	6.734	0.000	6.734

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APN/0705: *Common Ground Equipment-CASS/ATE*	110.114	104.170	111.816	-	111.816	109.734	118.058	120.418	121.920	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0852 / *Consolidated Auto Support System*

D. Acquisition Strategy

Formal test technology reviews with industry are conducted annually (cooperative Joint Services initiative) to define maturity of needed technologies. Further studies are conducted as needed. Procurement strategy is determined by market survey and cooperative opportunities.

E. Performance Metrics

Milestone Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 0852 / *Consolidated Auto Support System*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Dev - eCASS	C/CPIF	Lockheed Martin : Orlando, FL	101.263	2.329	Dec 2016	0.316	Dec 2017	0.000		-		0.000	0.000	103.908	103.908
Primary Hdw Dev - Test Technology	C/CPFF	Various : Various	1.711	2.069	Dec 2016	1.664	Dec 2017	1.643	Dec 2018	-		1.643	Continuing	Continuing	Continuing
Primary Hdw Dev - EO3	SS/CPFF	Northrop Grumman : Rolling Meadows, IL	0.000	0.000		3.417	Mar 2018	3.621	Dec 2018	-		3.621	0.690	7.728	7.728
Prior Year Prod Dev no longer funded in the FYDP	Various	Various : Various	28.397	0.000		0.000		0.000		-		0.000	0.000	28.397	-
		Subtotal	131.371	4.398		5.397		5.264		-		5.264	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
eCASS Support	WR	Various : Various	5.333	0.562	Dec 2016	0.000		0.000		-		0.000	0.000	5.895	-
eCASS Support	WR	NAWC AD : Lakehurst, NJ	8.407	0.548	Dec 2016	0.000		0.000		-		0.000	0.000	8.955	-
Test Technology Support	WR	NAWC AD : Lakehurst, NJ	0.600	0.660	Dec 2016	0.674	Dec 2017	0.689	Dec 2018	-		0.689	Continuing	Continuing	Continuing
EO3 Support	WR	NAWC AD : Lakehurst, NJ	0.000	0.000		0.497	Dec 2017	0.680	Dec 2018	-		0.680	0.198	1.375	-
Prior Year Support no longer funded in the FYDP	Various	Various : Various	12.853	0.000		0.000		0.000		-		0.000	0.000	12.853	-
		Subtotal	27.193	1.770		1.171		1.369		-		1.369	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
eCASS Travel	WR	Various : Various	0.906	0.084	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test Tech Travel	WR	Various : Various	0.250	0.056	Nov 2016	0.044	Nov 2017	0.048	Nov 2018	-		0.048	Continuing	Continuing	Continuing
EO3 Travel	WR	Various : Various	0.000	0.000		0.049	Nov 2017	0.053	Nov 2018	-		0.053	0.021	0.123	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 0852 / *Consolidated Auto Support System*	

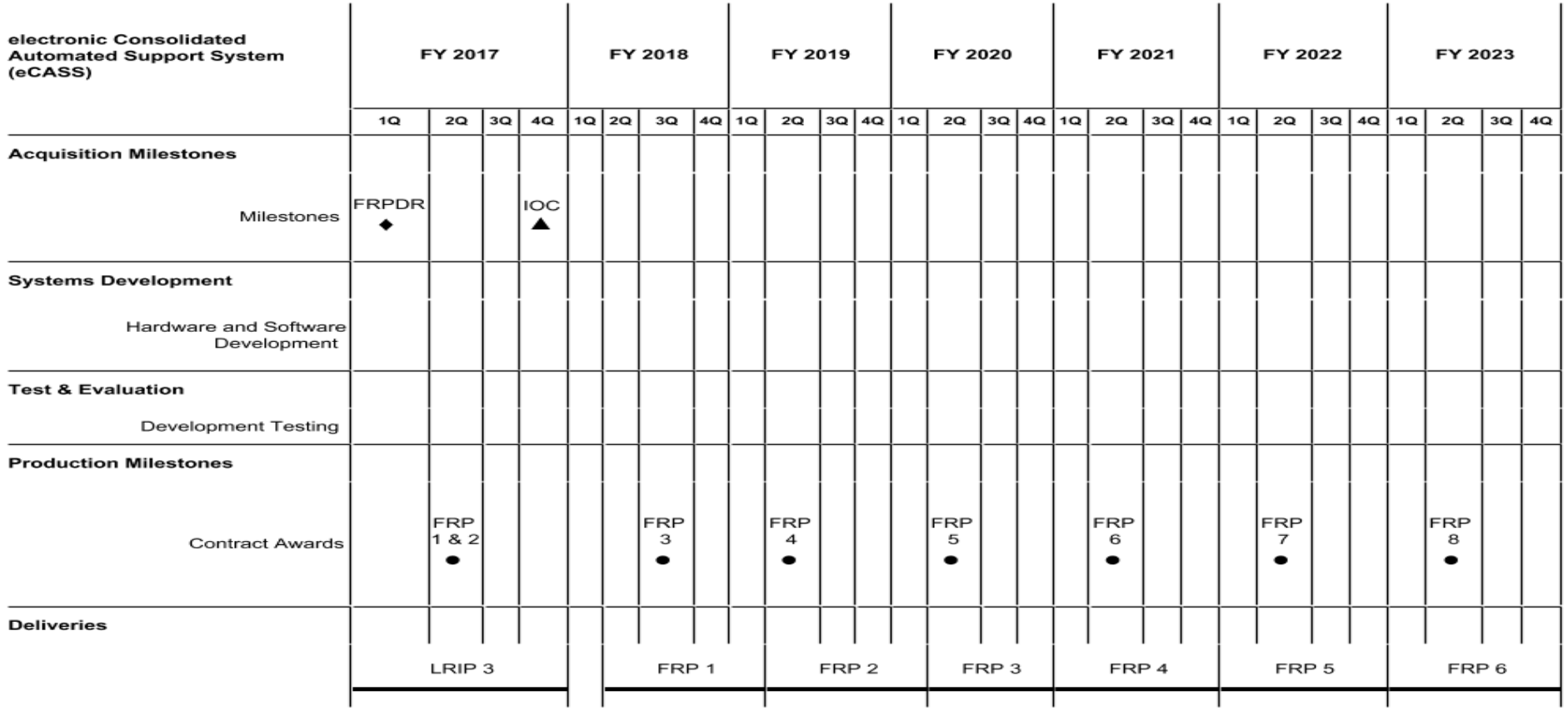
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Mgmt no longer funded in the FYDP	Various	Various : Various	1.669	0.000		0.000		0.000		-		0.000	0.000	1.669	-
		Subtotal	2.825	0.140		0.093		0.101		-		0.101	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	161.389	6.308		6.661		6.734		-		6.734	Continuing	Continuing	N/A

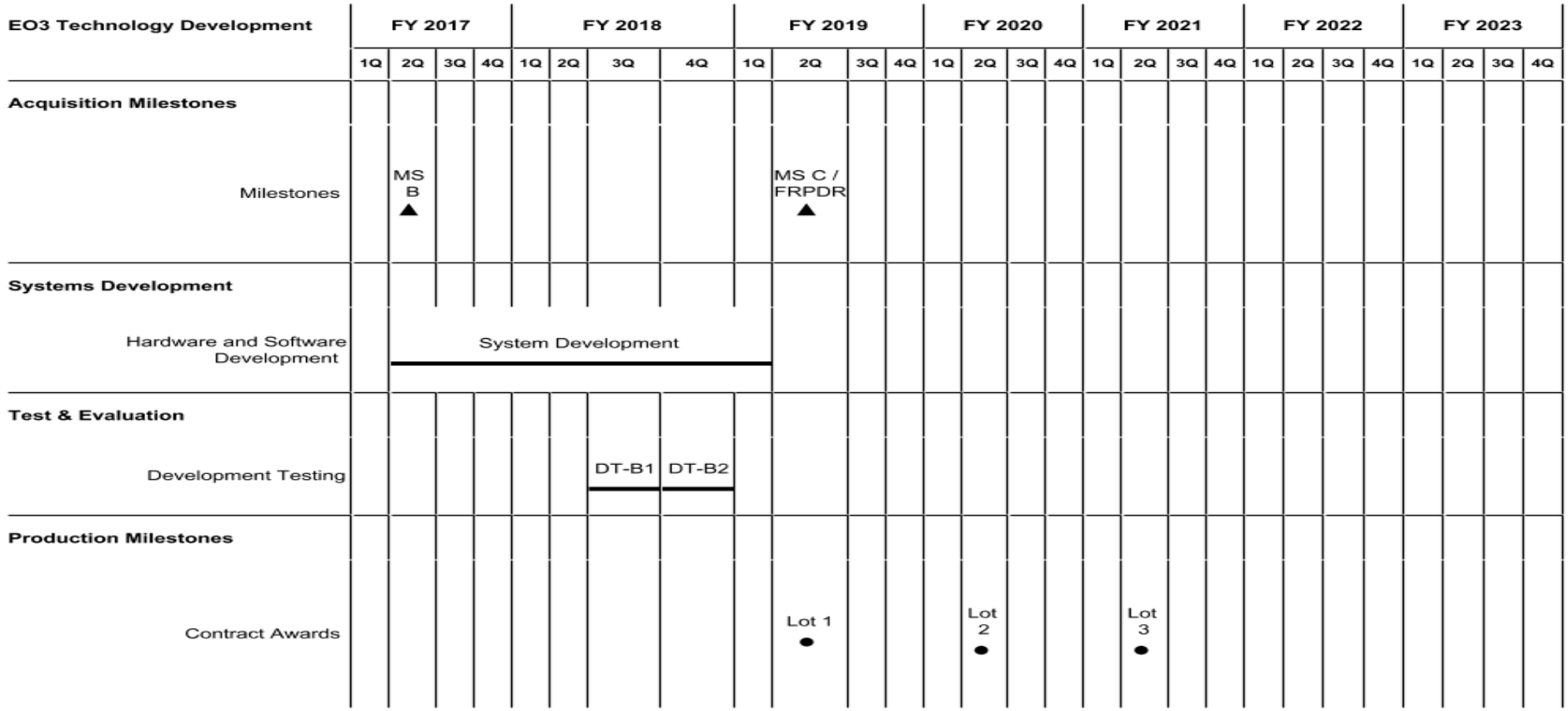
Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0852 / *Consolidated Auto Support System*



2019DON - 0205633N - 0852

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0852 / *Consolidated Auto Support System*



2019DON - 0205633N - 0852

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0852 / *Consolidated Auto Support System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
electronic Consolidated Automated Support System (eCASS)				
Acquisition Milestones: Milestones: Full Rate Production Decision Review	1	2017	1	2017
Acquisition Milestones: Milestones: Initial Operating Capability	4	2017	4	2017
Production Milestones: Contract Awards: eCASS FRP 1/2-APN	2	2017	2	2017
Production Milestones: Contract Awards: eCASS FRP 3-APN	3	2018	3	2018
Production Milestones: Contract Awards: eCASS FRP 4-APN	2	2019	2	2019
Production Milestones: Contract Awards: eCASS FRP 5-APN	2	2020	2	2020
Production Milestones: Contract Awards: eCASS FRP 6-APN	2	2021	2	2021
Production Milestones: Contract Awards: eCASS FRP 7-APN	2	2022	2	2022
Production Milestones: Contract Awards: eCASS FRP 8-APN	2	2023	2	2023
Deliveries: eCASS LRIP 3	1	2017	4	2017
Deliveries: eCASS FRP 1	2	2018	1	2019
Deliveries: eCASS FRP 2	2	2019	1	2020
Deliveries: eCASS FRP 3	2	2020	4	2020
Deliveries: eCASS FRP 4	1	2021	4	2021
Deliveries: eCASS FRP 5	1	2022	4	2022
Deliveries: eCASS FRP 6	1	2023	4	2023
EO3 Technology Development				
Acquisition Milestones: Milestones: Milestone B	2	2017	2	2017
Acquisition Milestones: Milestones: Milestone C / FRPDR	2	2019	2	2019
Systems Development: Hardware and Software Development: System Development	2	2017	1	2019
Test & Evaluation: Development Testing: Design Verification Testing: DT-B1	3	2018	3	2018
Test & Evaluation: Development Testing: Regression Testing: DT-B2	4	2018	4	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 0852 / *Consolidated Auto Support System*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Milestones: Contract Awards: Lot 1 - 33 Units-APN	2	2019	2	2019
Production Milestones: Contract Awards: Lot 2 - 32 Units-APN	2	2020	2	2020
Production Milestones: Contract Awards: Lot 3 - 26 Units-APN	2	2021	2	2021

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 1041 / *Acft Equip Repl/Maint Prog*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
1041: *Acft Equip Repl/Maint Prog*	49.999	8.223	3.356	3.369	-	3.369	3.433	3.517	3.583	3.654	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Aircraft Equipment Reliability/Maintainability Improvement Program (AERMIP) is the only Navy program which provides Research, Development, Test & Evaluation engineering support specifically for in-service, out-of-production aircraft equipment. AERMIP increases readiness through reliability, maintainability, and safety improvements to existing systems and equipment installed in Naval aircraft. It also provides a transition vehicle to deploy Total Ownership Cost reduction initiatives through flight-test support and Fleet Test & Evaluation. It meets affordable readiness objectives by providing a cost-effective solution to obsolescence problems encountered when service lives are extended. AERMIP promotes commonality and standardization across aircraft platform lines and among the services through extension of application and use of non-developmental items. AERMIP also decreases life cycle costs through reduced operational and support costs. AERMIP facilitates the Operational, Safety and Improvement Program by applying proven low-risk solutions to current fleet problems. AERMIP also funds high-priority flight testing which is not associated with any acquisition or development program under the Flight Test General task.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Avionics and Wiring	0.564	0.379	0.416	0.000	0.416
Articles:	-	-	-	-	-
FY 2018 Plans: Test and evaluate equipment for effectiveness of wiring diagnostics and prognostics. Address avionics related reliability/maintainability issues impacting multiple aircraft platforms while continuing to investigate high value return on investment initiatives. Qualify additional material or pieces of equipment and the procedures or processes required for implementation.					
FY 2019 Base Plans: Test and evaluate equipment for effectiveness of wiring diagnostics and prognostics. Address avionics related reliability/maintainability issues impacting multiple aircraft platforms while continuing to investigate high value return on investment initiatives. Qualify additional material or pieces of equipment and the procedures or processes required for implementation.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1041 / *Acft Equip Repl/Maint Prog*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Increase of 0.037 provides additional investigation and testing to be performed for high value return on investment opportunities.					
Title: Air Vehicle	7.071	2.060	2.040	0.000	2.040
Articles:	-	-	-	-	-
FY 2018 Plans: Based on advancement in technology, test and qualify new materials or equipment and the procedures/process required for their implementation to improve operational reliability, while containing cost growth. Continue to test and qualify improved corrosion preventative compounds. Address subsystem related reliability/maintainability issues impacting multiple aircraft platforms while continuing to investigate high value return on investment initiatives. Maintain efforts to qualify improved methods of structural component repair.					
FY 2019 Base Plans: Based on advancement in technology, test and qualify new materials or equipment and the procedures/process required for their implementation to improve operational reliability, while containing cost growth. Continue to test and qualify improved corrosion preventative compounds. Address subsystem related reliability/maintainability issues impacting multiple aircraft platforms while continuing to investigate high value return on investment initiatives. Maintain efforts to qualify improved methods of structural component repair.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease due to Economic Assumptions which will reduce Organic labor.					
Title: Systems Engineering Revitalization	0.588	0.917	0.913	0.000	0.913
Articles:	-	-	-	-	-
FY 2018 Plans: Continue with improvements in the current SE process and transition to model-centric systems engineering methodology (SE transformation). This transformation evolution requires updates to process, methods, tools, and training. Associated products include evolving Systems Engineering Technical Review checklist to a model-centric design assessment framework and continuing the development and deployment of the web-based collaborative Systems Engineering toolset (Integrated System Engineering Environment).					
FY 2019 Base Plans: Continue the transition to model based system engineering methodology. Continue to develop and establish					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1041 / *Acft Equip Repl/Maint Prog*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
infrastructure and tools for an Integrated Modeling Environment. Establish processes and procedures for developing and extending systems models. Develop standard model libraries and stereotypes for NAVAIR use. Continue research in relevant technical areas. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to process improvement adjustments which will reduce Contractor support.					
Accomplishments/Planned Programs Subtotals	8.223	3.356	3.369	0.000	3.369

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This is a non-ACAT program. Procurement strategy is determined by market survey and cooperative opportunities.

E. Performance Metrics

The Aircraft Equipment Reliability/Maintainability Improvement Program (AERMIP) program will, at a minimum, fund 8 to 15 projects a year that investigate and evaluate reliability and maintainability improvements to in-service, out-of-production aircraft equipment. AERMIP projects will have a greater than 75% success rate of insertion into Department of the Navy warfighting systems or support infrastructure.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 1041 / *Acft Equip Repl/Maint Prog*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng - Avionics/Wiring	WR	NAWCAD : Patuxent River, MD	6.122	2.952	Oct 2016	0.184	Oct 2017	0.276	Oct 2018	-		0.276	Continuing	Continuing	Continuing
Sys Eng - Avionics/Wiring	C/FFP	Various : Various	0.555	2.200	Aug 2018	0.055	Jan 2018	0.060	Jan 2019	-		0.060	0.000	2.870	0.670
Sys Eng - Avionics/Wiring	WR	FRC-E : Cherry Point, NC	0.100	0.010	Nov 2016	0.050	Nov 2017	0.010	Nov 2018	-		0.010	Continuing	Continuing	Continuing
Sys Eng - Avionics/Wiring	WR	FRC-SE : Jacksonville, FL	0.000	0.010	Nov 2016	0.025	Nov 2017	0.010	Nov 2018	-		0.010	Continuing	Continuing	Continuing
Sys Eng - Avionics/Wiring	WR	FRC-SW : San Diego, CA	0.000	0.010	Nov 2016	0.025	Nov 2017	0.010	Nov 2018	-		0.010	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	WR	NAWCAD : Patuxent River, MD	10.765	0.992	Oct 2016	0.269	Oct 2017	0.245	Nov 2018	-		0.245	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	WR	FRC-SW : San Diego, CA	2.124	0.257	Nov 2016	0.025	Nov 2017	0.175	Nov 2018	-		0.175	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	WR	FRC-E : Cherry Point, NC	1.815	0.286	Nov 2016	0.025	Nov 2017	0.060	Nov 2018	-		0.060	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	WR	FRC-SE : Jacksonville, FL	1.148	0.068	Nov 2016	0.025	Nov 2017	0.020	Nov 2018	-		0.020	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	C/FFP	Various : Various	0.962	0.000		1.556	Jan 2018	1.390	Jan 2019	-		1.390	0.000	3.908	3.908
Sys Eng - Air Vehicle	C/CPFF	Innovative Technology, Inc. : Santa Barbara, CA	0.100	0.000		0.000		0.000		-		0.000	0.000	0.100	0.100
Sys Eng - SE Revitalization	WR	NAWCAD : Patuxent River, MD	0.994	0.003	Oct 2016	0.117	Nov 2017	0.006	Dec 2018	-		0.006	Continuing	Continuing	Continuing
Sys Eng - SE Revitalization	C/FFP	Engility Corp. : Chantilly, VA	4.519	0.508	Jan 2017	0.550	Jan 2018	0.232	May 2019	-		0.232	0.000	5.809	5.809
Sys Eng - SE Revitalization	C/CPFF	Stevens Inst of Technology : Hoboken, NJ	1.543	0.727	Jan 2017	0.250	Dec 2017	0.675	Jan 2019	-		0.675	0.000	3.195	3.195
Prior Year Sys Eng NAE/ Prod Dev no longer funded in the FYDP	Various	Various : Various	2.713	0.000		0.000		0.000		-		0.000	0.000	2.713	-
		Subtotal	33.460	8.023		3.156		3.169		-		3.169	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 1041 / *Acft Equip Repl/Maint Prog*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Support cost no longer funded in the FYDP	Various	Various : Various	12.480	0.000		0.000		0.000		-		0.000	0.000	12.480	-
		Subtotal	12.480	0.000		0.000		0.000		-		0.000	0.000	12.480	N/A

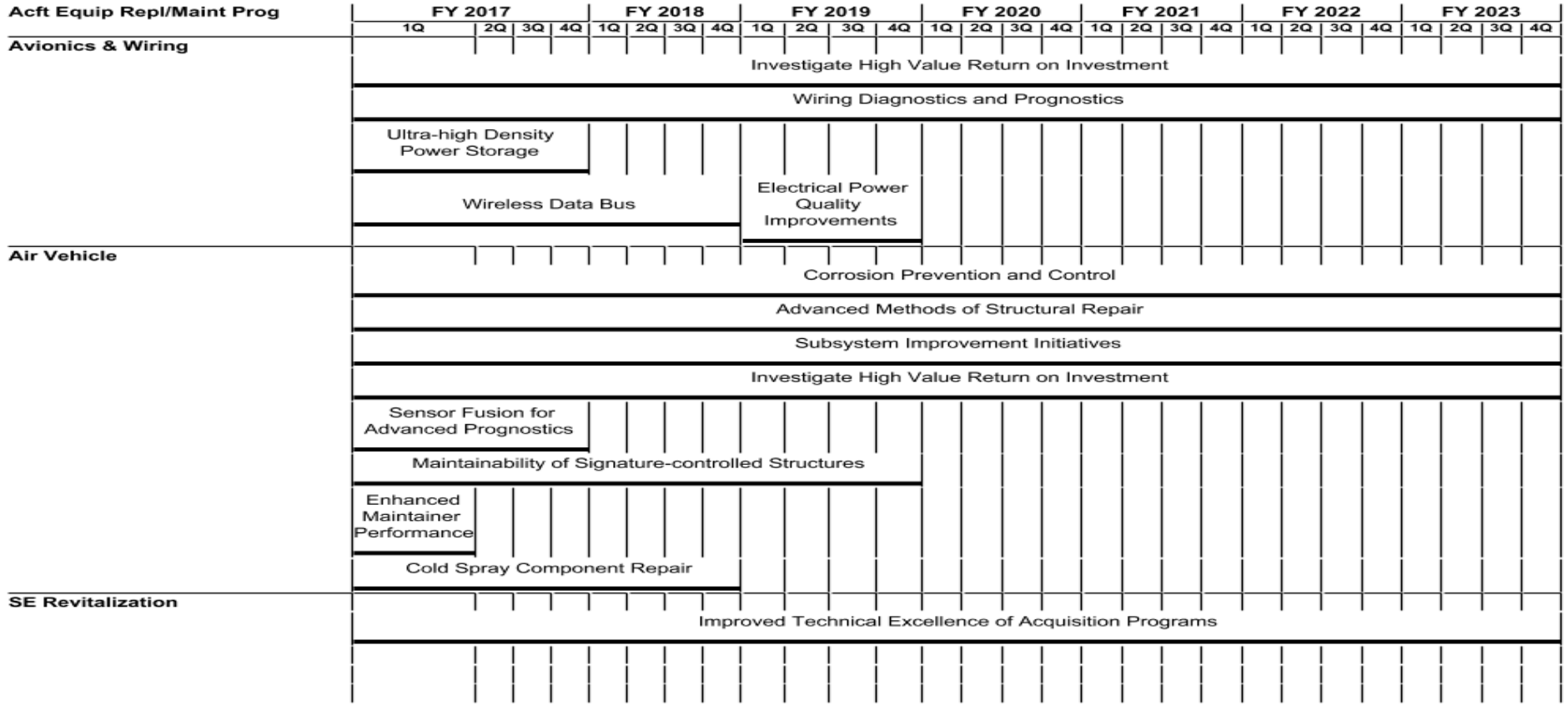
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD : Patuxent River, MD	2.088	0.200	Oct 2016	0.200	Oct 2017	0.200	Oct 2018	-		0.200	Continuing	Continuing	Continuing
Prior Year Mgmt cost no longer funded in the FYDP	Various	Various : Various	1.971	0.000		0.000		0.000		-		0.000	0.000	1.971	-
		Subtotal	4.059	0.200		0.200		0.200		-		0.200	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	49.999	8.223		3.356		3.369		-		3.369	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1041 / *Acft Equip Repl/Maint Prog*



2019DON - 0205633N - 1041

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1041 / *Acft Equip Repl/Maint Prog*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Acft Equip Repl/Maint Prog				
Avionics & Wiring: Investigate High Value Return on Avionics & Wiring Investment	1	2017	4	2023
Avionics & Wiring: Wiring Diagnostics and Prognostics	1	2017	4	2023
Avionics & Wiring: Ultra-high Density Power Storage	1	2017	4	2017
Avionics & Wiring: Wireless Data Bus	1	2017	4	2018
Avionics & Wiring: Electrical Power Quality Improvements	1	2019	4	2019
Air Vehicle: Corrosion Prevention and Control	1	2017	4	2023
Air Vehicle: Advanced Methods of Structural Repair	1	2017	4	2023
Air Vehicle: Subsystem Improvement Initiatives	1	2017	4	2023
Air Vehicle: Investigate High Value Return on Air Vehicle Investment	1	2017	4	2023
Air Vehicle: Sensor Fusion for Advanced Prognostics	1	2017	4	2017
Air Vehicle: Maintainability of Signature-controlled Structures	1	2017	4	2019
Air Vehicle: Enhanced Maintainer Performance	1	2017	1	2017
Air Vehicle: Cold Spray Component Repair	1	2017	4	2018
SE Revitalization: Improved Technical Excellence of Acquisition Programs	1	2017	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy					Date: February 2018							
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*				Project (Number/Name) 1355 / *Propulsion and Power Component Improvement Program*			
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
1355: *Propulsion and Power Component Improvement Program*	1,054.223	89.303	94.001	105.223	-	105.223	108.500	107.164	107.355	108.984	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Propulsion and Power (P&P) Component Improvement Program (CIP) provides the only source of critical design and development engineering support to resolve safety, reliability and maintainability deficiencies of in-service Navy and Marine Corps aircraft propulsion systems. The highest priority issues P&P CIP addresses concern safety-of-flight deficiencies, which account for approximately 80% of P&P CIP efforts. The program also corrects service-revealed deficiencies, improves Operational Readiness and Reliability and Maintainability, and reduces platform Life Cycle Cost. Budgets are allocated across platform-specific teams and multi-platform product support teams based upon long term strategies to achieve safety and affordable readiness goals; the R-3 exhibit details annual portions of those long-term strategies. P&P CIP tasks have reduced the rate of in-flight aborts, safety incidents, non-mission capable rates, scheduled and unscheduled engine removals, maintenance work hours, and overall cost of ownership. This is accomplished through the maintenance and validation of specification performance, testing to qualify engineering changes, verifying life limits, and improving the inherent reliability of the propulsion and power systems as an integral part of Reliability Centered Maintenance initiatives. Historically, the missions, tactics, and environmental exposure of military aircraft systems change to meet new threats or operational demands, and often result in unforeseen problems, which if not corrected, can cause critical safety/readiness degradation, such as those experienced during OPERATIONS DESERT SHIELD/DESERT STORM, ENDURING FREEDOM, and IRAQI FREEDOM due to sand erosion. In addition, new problems arise through actual fleet deployment and usage of the aircraft. System development programs, while geared to resolve as many problems as possible before deployment, cannot duplicate actual operations or account for the vast array of environmental and usage variables, particularly when aircraft missions vary from those that the aircraft was designed to perform. Therefore, it has been found that P&P CIP can provide an immediate engineering response to these flight-critical problems and accelerated engine testing can avoid potential problems. P&P CIP starts after development and Navy acceptance of the first production article and addresses usage and life problems not covered by warranties. P&P CIP addresses engines, transmissions, propellers, starters, auxiliary power units, electrical generating systems, aircraft wiring, and fuel and lubricant systems. These efforts continue over the system's life, gradually decreasing to a minimum level sufficient to maintain the reliability, and decrease the operating costs, of older inventory. P&P CIP is a highly leveraged and cooperative tri-service program with Foreign Military Sales participation.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**
Title: P3, E2, C2, C130 (T56)	8.671	11.000	10.300	0.000	10.300
Articles:	-	-	-	-	-
FY 2018 Plans: Complete bench testing and qualification testing on front turbine bearing cage, front turbine bearing support and combustor liner redesigns. Execute engine Accelerated Mission Test. Submit engineering change for combustor					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
liner redesign. Initiate development and design of updated software for the propulsion control and monitoring unit to correct identified deficiencies. ***FY 2019 Base Plans:*** Continue joint projects with the USAF on the T56 Series III engine on the analysis, design and qualification of improvements to the front turbine bearing cage, front turbine bearing support, front bearing chamber labyrinth seal, engine parts and propeller brake lining obsolescence and repair engineering development. Execute engine Accelerated Mission Test. For the T56 Series IV engine perform analysis, design and qualification work related to engine performance standardization, rub tolerant turbine blades, fuel nozzle anti-coke coating, step up gearbox oil leakage and updated software for the propulsion control and monitoring unit. Develop, design and test improvements to system components including compressors, combustors, turbines, controls, diagnostics, static structures, gearboxes, bearings, seals, drives, fuels, lubricants, auxiliary power, electrical power systems. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The -0.7 reduction is due to reduced T56 Series III engine design change activity for the P-3 fleet.					
Title: E2/C2/C130/P3 (Props)	2.398	1.500	3.600	0.000	3.600
Articles:	-	-	-	-	-
FY 2018 Plans: Complete design and submit engineering change for 54H60 propeller brake lining obsolescence redesign. Complete field service evaluation and submit engineering change for NP2000 variable pitch actuator transfer tube seal improvement redesign. ***FY 2019 Base Plans:*** Develop, design and test 54H60 and NP2000 Propeller system improvements including control, pitch actuation, hydraulics, blades, pumps, housings, seals and static structure projects to improve safety, reliability, maintainability, affordability, durability and Readiness including efforts on repair and reliability engineering, universal closed loop bench test system, database development and management. For the NP2000 perform analysis, design and testing on the modern pump housing and onboard propeller balance monitoring system. ***FY 2019 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The 2.1 increase will fund the increased 54H60 and NP2000 propeller system improvements design effort.					
Title: SH-60B/F, HH-60H, MH-60R/S (T700)	3.318	5.678	5.700	0.000	5.700
Articles:	-	-	-	-	-
FY 2018 Plans: Continue redesign work to reduce impact of cost and readiness drivers for the T700 engine. Conduct lithium battery qualification safety and performance testing. Complete test planning in preparation for an engine accelerated simulated mission endurance test and saltwater ingestion test to qualify Black Gold compressor coating.					
FY 2019 Base Plans: Develop, design and test improvements to system components including compressors, combustors, turbines, controls, diagnostics, static structures, gearboxes, bearings, seals, drives, fuels, lubricants, auxiliary power, electrical power systems. Perform analysis, design and testing on projects to improve the compression system and static structures tolerance to sand ingestion, engine performance modeling and engine build optimization. Perform analysis, modeling design and testing on projects related to air vehicle drive system damage tolerance and reparability. Conduct lithium battery qualification testing. Perform engine testing to develop and qualify design improvements.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: The 0.022 increase is for the increased testing required for the T700 engine.					
Title: H-1 (T400/T700)	1.000	0.431	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2018 Plans: Redesign the air vehicle tail rotor flexible coupling to a non-lubricated design to improve reliability. Update subsystem support planning based on evaluation of maintenance task improvements, service-revealed					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
deficiencies, and emergent issues from fleet operational usage on all propulsion and power subsystems, including engine, auxiliary power unit, fuel, electrical power, and wiring. ***FY 2019 Base Plans:*** N/A ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease of -0.431 is due to reduced air vehicle drive system design change.					
Title: AV-8B (F402) ***Articles:*** ***FY 2018 Plans:*** Continue working on risk management plan of supplying critical parts and refinement of life limit determinations and identification of critical parts constraints. Continue efforts to identify alternate parts and vendors for consumable hardware. ***FY 2019 Base Plans:*** Continue working on risk management plan of supplying critical parts and refinement of life limit determinations and identification of critical parts constraints. Perform analysis, design and testing related to improvements to system components including compressors, combustors, turbines, controls, diagnostics, static structures, gearboxes, bearings, seals, drives, fuels, lubricants, auxiliary power, electrical power systems, Hydro mechanical unit PMA gear, FOD detection system, brake seal redesign to improve safety, reliability, maintainability, affordability, durability and Readiness. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease of -0.419 is due to reduced F402 engine design change.	3.560 -	3.849 -	3.430 -	0.000 -	3.430 -
Title: H-53/H-46/H-3 (T58/T64) ***Articles:*** ***FY 2018 Plans:***	3.275 -	4.530 -	3.800 -	0.000 -	3.800 -

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Continue to develop inspection and repair criteria for fielded components and optimization of depot-level engine build practices and procedures to increase engine performance. Continue updates of engine mission usage and engine critical hardware life management plans. Evaluate engine fuel nozzle candidate anti-coking coatings to improve fuel nozzle durability. ***FY 2019 Base Plans:*** Perform analysis, design and testing related to projects to develop inspection and repair criteria and optimized depot-level engine build specification practices and procedures, data reduction program implementation, compressor case coating improvements and remote idle cable interface system. Update engine mission usage and hardware life management plans. Evaluate engine fuel nozzle anti-coking coatings. Develop, design and test improvements to system components including compressors, combustors, turbines, controls, diagnostics, static structures, gearboxes, bearings, seals, drives, fuels, lubricants, auxiliary power, electrical power systems to improve safety, reliability, maintainability, affordability, durability and Readiness. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease of -0.73 is due to reduced H-53 (T64) engine design change.					
Title: F-18 C/D/E/F (F414/F404)	22.669	16.926	19.758	0.000	19.758
Articles:	-	-	-	-	-
FY 2018 Plans: Continue F404 engine electrical control assembly obsolescence redesign. Develop an improved engine vibration measurement system to increase measurement accuracy at fleet test cells. Continue evaluation and testing of alternate engine fan blade dovetail coatings to improve component durability. Perform rotor spin testing of engine fan hardware to verify the low cycle fatigue life benefit of the low plasticity burnishing surface treatment. Apply data analytics tools to engine reliability data sets to identify engine removal driver causes. Complete design efforts to extend the life of the F414 engine main fuel manifold. Continue redesign of the high-pressure turbine blades to reduce the frequency of unscheduled engine removals. Continue design of improved oil system components and architecture to reduce in-flight mission abort rates. Continue investigation of engine variable exhaust nozzle hydro-mechanical failure events. Continue analysis and evaluation of composite outer bypass duct delamination. ***FY 2019 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Perform analysis, design and testing related to F404 electrical control assembly obsolescence recovery, improved engine vibration measurement system, and evaluation of fan blade dovetail coatings to improve durability. Perform rotor spin testing of engine fan to verify surface treatment life benefit. Perform analysis, design and testing related to application of data analytics tools to identify engine removal driver causes, F414 engine main fuel manifold life extension, high-pressure turbine blades redesign, oil system improvements, engine VEN hydro-mechanical failure events, composite outer bypass duct delamination, compressor discharge pressure anti-ice valve VEN position transmitter system, engine build optimization and FADEC obsolescence. Perform engine accelerated simulated mission endurance testing. Develop, design and test improvements to system components including compressors, combustors, turbines, controls, diagnostics, static structures, gearboxes, bearings, seals, drives, fuels, lubricants, auxiliary power, electrical power, augmentor and exhaust systems to improve safety, reliability, maintainability, affordability, durability and Readiness. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of 2.832 is due to additional engine test activity for the F414 and F404.					
Title: T-45 (F405)	4.072	3.021	2.446	0.000	2.446
Articles:	-	-	-	-	-
FY 2018 Plans: Continue redesign work to reduce impact of cost and readiness drivers for the F405 engine based on service revealed deficiencies and address safety issues reported from fleet. Initiate component level rotor spin testing of the low pressure compressor to verify the ability of the improved blade dovetail coating system to mitigate blade cracking under high-cycle fatigue excitation conditions. Perform assessment of engine cyclic usage rates at the Kingsville and Meridian sites to update critical rotating engine part lives. Continue study to identify mitigation approaches to address propulsion and power system component obsolescence issues. ***FY 2019 Base Plans:*** Perform analysis, design and testing on projects to verify improved blade dovetail coating, engine cyclic usage assessment to update rotating engine part lives and mitigation approaches to address propulsion and power system component obsolescence issues and engine performance degradation. Develop, design and test improvements to system components including compressors, combustors, turbines, controls, diagnostics, static					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
structures, gearboxes, bearings, seals, drives, fuels, lubricants, auxiliary power, electrical power systems to improve safety, reliability, maintainability, affordability, durability and Readiness. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease of -0.575 is due to the reduced F405 engine design change activity.					
Title: V-22 Propulsion	2.787	4.236	5.200	0.000	5.200
Articles:	-	-	-	-	-
FY 2018 Plans: Prepare for full-scale engine testing to mitigate rapid power loss and engine surge events that have occurred during reduced visibility landing operations to increase flight safety. Complete update of engine critical part lives and engine life management plan based on updated mission mix usage requirements. Perform redesign to improve prop rotor input quill clutch system robustness to address known failure modes. Continue efforts to improve accuracy of the in-flight power assurance check to improve mission planning capability. ***FY 2019 Base Plans:*** Perform analysis, design and testing on projects to mitigate rapid power loss and engine surge, update engine part lives and management plan with updated mission mix, prop rotor input quill clutch system redesign and improved power assurance check accuracy to improve mission planning. Develop, design and test improvements to system components including compressors, combustors, turbines, controls, diagnostics, static structures, gearboxes, bearings, seals, drives, fuels, lubricants, auxiliary power, electrical power systems to improve safety, reliability, maintainability, affordability, durability and Readiness. Perform engine analytical condition inspections, air vehicle drive system damage tolerance assessment and turbine rig and full scale engine testing. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of 0.964 is due to increased engine and drive system design changes for the V-22 propulsion.					
Title: Adversary (J85) (F100)	1.453	2.660	2.200	0.000	2.200
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2018 Plans: Continue contributing to the J85 and F100 common CIP with the USAF and Foreign Military Sales customers. Continue validation and life assessment of J85 life limited critical rotating hardware in the compressor including front and rear spools and turbine including stage 1 and stage 2 disks. Evaluate hardware inspection data, and perform stress modeling to update low cycle fatigue life limits. Implement an upgraded modification of the engine performance monitoring system for future mission analysis. Implement J85 improved turbine thermocouple probe and harness redesign to reduce engine performance related removals driven by harness failures. ***FY 2019 Base Plans:*** Continue joint projects with the USAF to perform analysis, design and testing on projects to validate the life assessment of J85 critical rotating compressor hardware, address parts obsolescence issues, evaluate hardware inspection data, and perform stress modeling to update life limits, implement upgraded engine performance monitoring system, and implement improved turbine thermocouple probe and harness redesign. Develop, design and test improvements to system components including compressors, combustors, turbines, controls, diagnostics, static structures, gearboxes, bearings, seals, drives, fuels, lubricants, auxiliary power, electrical power, augmenter and exhaust systems to improve safety, reliability, maintainability, affordability, durability and Readiness. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease of -0.46 is due to the completion of the engine design projects on the performance monitoring and thermocouple systems.					
Title: Joint Strike Fighter (F135 Engine)	28.479	32.861	33.526	0.000	33.526
Articles:	-	-	-	-	-
FY 2018 Plans: Continue to work with Joint Program Office, USAF, international partners, and foreign military sales customers to prioritize and develop engineering project descriptions that resolve flight test and fleet service revealed deficiencies. In concert with the USAF, support joint service engine accelerated simulated mission endurance testing and LTF engine testing on the conventional takeoff and landing propulsion system. Prepare for the short					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
takeoff/vertical landing (STOVL) accelerated simulated mission endurance testing with hardware improvements to demonstrate continued durability improvement. ***FY 2019 Base Plans:*** Continue to work with Joint Program Office, USAF, international partners, and foreign military sales customers to develop engineering project descriptions to resolve service revealed deficiencies. Develop, design and test improvements to system components including compressors, combustors, turbines, controls, diagnostics, static structures, gearboxes, bearings, seals, drives, fuels, lubricants, auxiliary power, electrical power, augmenter, exhaust and STOVL Lift system to improve safety, reliability, maintainability, affordability, durability and Readiness. Perform engine testing and STOVL propulsion system testing ant government and contractor test facilities. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of 0.665 is for the increased F135 engine and lift system design change.					
Title: P-8A (CFM56 Engine)	1.150	0.500	0.600	0.000	0.600
Articles:	-	-	-	-	-
FY 2018 Plans: Mature out-year program engine management planning and updates to operational and readiness metric baselines and mature subsystem support planning based on evaluation of leading indicators, age exploration results, maintenance task improvements, service-revealed deficiencies, and emergent issues from fleet operational usage on all propulsion and power subsystems, including engine, auxiliary power unit, fuel, electrical power, and wiring. ***FY 2019 Base Plans:*** Develop, design and test improvements to system components including compressors, combustors, turbines, controls, diagnostics, static structures, gearboxes, bearings, seals, drives, fuels, lubricants, auxiliary power, electrical power systems to improve safety, reliability, maintainability, affordability, durability and Readiness. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Increase of 0.1 is for the increased propulsion system design activity.					
Title: H-53K Propulsion	0.000	0.000	7.700	0.000	7.700
Articles:	-	-	-	-	-
FY 2018 Plans: N/A					
FY 2019 Base Plans: Develop, design and test improvements to Propulsion & Power system components including compressors, combustors, turbines, controls, diagnostics, static structures, gearboxes, bearings, seals, drives, fuels, lubricants, auxiliary power, electrical power systems to improve safety, reliability, maintainability, affordability, durability and Readiness. Acquire an engine test vehicle to qualify design changes developed under the component improvement program.					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement: Increase of 7.7 is for the development, design and test improvements for the H-53K Propulsion & Power system components.					
Title: Multi-Platform Product Support Teams	6.471	6.809	6.963	0.000	6.963
Articles:	-	-	-	-	-
FY 2018 Plans: Continue projects to provide common support to multiple platforms in the areas of improved drive systems, secondary power, and mechanical systems; improve tools for performance analysis, modeling and simulation, diagnostics, engine reliability assessment, and structural integrity; improve products and processes for fuels, lubricants, and refueling equipment; and improve electrical system product support, wiring, and battery systems. Includes funding for Government Furnished Equipment fuel provided in support of engine developmental and qualification testing.					
FY 2019 Base Plans: Continue projects to provide common support to multiple platforms in the areas of improved drive systems, secondary power, and mechanical systems; improve tools for performance analysis, modeling and simulation, diagnostics, engine reliability assessment, and structural integrity; improve products and processes for fuels,					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
lubricants, and refueling equipment; and improve electrical system product support, wiring, and battery systems. Includes funding for Government Furnished Equipment fuel provided in support of engine developmental and qualification testing. Modernize RDTE test facilities as required to qualify component design improvements. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of 0.154 is due to increased requirement for GFE fuel for engine development testing.					
Accomplishments/Planned Programs Subtotals	89.303	94.001	105.223	0.000	105.223

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This is a NON-ACAT program. Procurement strategy is determined by market survey and cooperative opportunities.

E. Performance Metrics

The Propulsion and Power Component (P&P) Improvement Program (CIP) will support engineering design and development efforts for 100% of the safety of flight issues on in-service propulsion and power systems covered under the Program. Over the past two years, this equated to more than 360 individual Engineering Project Descriptions (EPDs). Over the past two years P&P CIP also addressed reliability and maintainability deficiencies equating to another 100 individual EPDs. These projects have significantly increased the aggregate engine safety and reliability across the USN/ USMC fleet. From 2006 to 2016 P&P CIP has been a primary contributor to a 60% Reduction in propulsion and power system related Class A mishaps, a 118% increase in aggregate fleet engine reliability as measured by engine Time-On Wing (TOW) and the resultant cumulative engine repair cost avoidance of $5.5 B over that time span.

Program execution will be actively managed on 100% of the projects via contractor earned value data and overall obligation and expenditure rates as reflected in Navy ERP. Data will be analyzed and measured against OSD/FMB benchmarks on a monthly basis.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng T56 Engine Program	WR	NAWCAD : Patuxent River, MD	38.467	4.500	Nov 2016	4.153	Nov 2017	4.100	Oct 2018	-		4.100	Continuing	Continuing	Continuing
Sys Eng T56 Engine Program	SS/CPFF	Rolls Royce : Indianapolis, IN	52.492	3.876	Jan 2017	5.973	Jan 2018	5.500	Jan 2019	-		5.500	0.000	67.841	67.841
Sys Eng T56 Engine Program	WR	FRC-E : Cherry Point, NC	2.390	0.235	Nov 2016	0.810	Nov 2017	0.500	Oct 2018	-		0.500	Continuing	Continuing	Continuing
Sys Eng T56 Engine Program	WR	FRC-SE : Jacksonville, FL	0.875	0.010	Nov 2016	0.011	Nov 2017	0.100	Oct 2018	-		0.100	Continuing	Continuing	Continuing
Sys Eng T56 Engine Program	WR	FRC-SW : North Island, CA	0.075	0.050	Nov 2016	0.053	Nov 2017	0.100	Oct 2018	-		0.100	Continuing	Continuing	Continuing
Sys Eng Props Program	SS/CPFF	Hamilton Sundstrand : Windsor Locks, CT	26.035	2.398	Jan 2017	1.500	Jan 2018	3.600	Jan 2019	-		3.600	0.000	33.533	33.533
Sys Eng J52 Engine Program	WR	NAWCAD : Patuxent River, MD	14.429	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Sys Eng J52 Engine Program	SS/CPFF	UTC Pratt & Whitney : East Hartford, CT	41.445	0.000		0.000		0.000		-		0.000	0.000	41.445	41.445
Sys Eng J52 Engine Program	WR	FRC-E : Cherry Point, NC	0.088	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Sys Eng J52 Engine Program	WR	FRC-SE : Jacksonville, FL	0.425	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Sys Eng T700 Engine Program	WR	NAWCAD : Patuxent River, MD	16.241	1.500	Nov 2016	2.186	Nov 2017	2.500	Oct 2018	-		2.500	Continuing	Continuing	Continuing
Sys Eng T700 Engine Program	SS/CPFF	General Electric : Lynn, MA	32.211	1.818	Jan 2017	3.492	Jan 2018	3.200	Jan 2019	-		3.200	0.000	40.721	40.721
Sys Eng T700 Engine Program	IA	Army Research Lab : Aberdeen Proving Ground, MD	0.150	0.000		0.000		0.000		-		0.000	0.000	0.150	-
Sys Eng T400 Engine Program	WR	NAWCAD : Patuxent River, MD	2.167	1.000	Nov 2016	0.431	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng T400 Engine Program	SS/CPFF	UTC Pratt & Whitney : East Hartford, CT	5.890	0.000		0.000		0.000		-		0.000	0.000	5.890	5.890
Sys Eng F402 Engine Program	WR	NAWCAD : Patuxent River, MD	19.437	1.677	Nov 2016	1.693	Nov 2017	1.700	Oct 2018	-		1.700	Continuing	Continuing	Continuing
Sys Eng F402 Engine Program	WR	NAWCWD : China Lake, CA	0.303	0.000		0.000		0.000		-		0.000	0.000	0.303	-
Sys Eng F402 Engine Program	WR	FRC-E : Cherry Point, NC	0.897	0.105	Nov 2016	0.105	Nov 2017	0.130	Oct 2018	-		0.130	Continuing	Continuing	Continuing
Sys Eng F402 Engine Program	MIPR	DTIC : Fort Belvoir, VA	0.028	0.000		0.000		0.000		-		0.000	0.000	0.028	-
Sys Eng F402 Engine Program	SS/CPFF	Rolls Royce : Bristol, England, UK	75.531	1.778	Jan 2017	2.051	Jan 2018	1.600	Jan 2019	-		1.600	0.000	80.960	80.960
Sys Eng F402 Engine Program	C/FFP	Hood Technology Corp : Hood River, OR	0.845	0.000		0.000		0.000		-		0.000	0.000	0.845	0.845
Sys Eng T58/T64 Engine Program	WR	NAWCAD : Patuxent River, MD	34.829	2.150	Nov 2016	2.501	Nov 2017	2.100	Oct 2018	-		2.100	Continuing	Continuing	Continuing
Sys Eng T58/T64 Engine Program	SS/CPFF	General Electric : Lynn, MA	86.646	1.125	Jan 2017	2.029	Jan 2018	1.700	Jan 2019	-		1.700	0.000	91.500	91.500
Sys Eng T58/T64 Engine Program	C/FFP	Danobat Machine Tool Co. : Humble, TX	0.149	0.000		0.000		0.000		-		0.000	0.000	0.149	0.149
Sys Eng F414/F404 Engine Program	WR	NAWCAD : Patuxent River, MD	42.175	5.500	Nov 2016	6.009	Nov 2017	4.000	Oct 2018	-		4.000	Continuing	Continuing	Continuing
Sys Eng F414/F404 Engine Program	SS/CPFF	General Electric : Lynn, MA	149.668	16.799	Jan 2017	10.649	Jan 2018	15.508	Jan 2019	-		15.508	0.000	192.624	192.624
Sys Eng F414/F404 Engine Program	WR	FRC-SE : Jacksonville, FL	0.585	0.370	Nov 2016	0.268	Nov 2017	0.250	Nov 2018	-		0.250	Continuing	Continuing	Continuing
Sys Eng F405 Engine Program	WR	NAWCAD : Patuxent River, MD	10.587	1.400	Nov 2016	1.448	Nov 2017	1.400	Oct 2018	-		1.400	Continuing	Continuing	Continuing
Sys Eng F405 Engine Program	SS/CPFF	Rolls Royce : Bristol, England, UK	34.688	2.672	Jan 2017	1.573	Jan 2018	1.046	Jan 2019	-		1.046	0.000	39.979	39.979

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng V-22 Propulsion Program	WR	NAWCAD : Patuxent River, MD	0.785	0.892	Nov 2016	0.961	Nov 2017	1.100	Oct 2018	-		1.100	Continuing	Continuing	Continuing
Sys Eng V-22 Propulsion Program	SS/FFP	Bell- Boeing : Ft. Worth, TX	6.879	0.390	Jan 2017	1.775	Jan 2018	2.100	Jan 2019	-		2.100	0.000	11.144	11.144
Sys Eng V-22 Propulsion Program	SS/CPFF	Rolls Royce : Indianapolis, IN	1.580	1.505	Jan 2017	2.000	Jan 2018	2.000	Jan 2019	-		2.000	0.000	7.085	7.085
Sys Eng V-22 Propulsion Program	C/FFP	Nat'l Center for Manuf'g Sciences : Ann Arbor, MI	0.166	0.000		0.000		0.000		-		0.000	0.000	0.166	0.166
Sys Eng V-22 Propulsion Program	C/FFP	Univ of Dayton Research Inst. : Dayton, OH	0.040	0.000		0.000		0.000		-		0.000	0.000	0.040	0.040
Sys Eng V-22 Propulsion Program	MIPR	Army Research Lab : Aberdeen Proving Ground, MD	0.299	0.000		0.000		0.000		-		0.000	0.000	0.299	-
Sys Eng V-22 Propulsion Program	C/CPFF	UTC Pratt & Whitney : East Hartford, CT	0.138	0.000		0.000		0.000		-		0.000	0.000	0.138	0.138
Sys Eng Adversary J85 Engine Program	WR	FRC-SE : Jacksonville, FL	0.038	0.045	Jan 2017	0.000		0.100	Nov 2018	-		0.100	Continuing	Continuing	Continuing
Sys Eng Adversary J85 Engine Program	WR	NAWCAD : Patuxent River, MD	2.596	1.034	Nov 2016	1.430	Nov 2017	1.500	Oct 2018	-		1.500	Continuing	Continuing	Continuing
Sys Eng Adversary J85 Engine Program	SS/CPFF	General Electric : Lynn, MA	2.052	0.374	Jan 2017	1.230	Jan 2018	0.600	Jan 2019	-		0.600	0.000	4.256	4.256
Sys Eng Adversary J85 Engine Program	C/FFP	UTC Military Engines : East Hartford, CT	0.083	0.000		0.000		0.000		-		0.000	0.000	0.083	0.083
Sys Eng JSF Engine Program	WR	NAWCAD : Patuxent River, MD	5.977	1.000	Nov 2016	1.000	Nov 2017	1.283	Oct 2018	-		1.283	Continuing	Continuing	Continuing
Sys Eng JSF Engine Program	SS/FFP	UTC Pratt & Whitney : East Hartford, CT	21.000	27.479	Jan 2017	31.660	Jan 2018	32.243	Jan 2019	-		32.243	0.000	112.382	112.382

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng JSF Engine Program	WR	FRC-E : Cherry Point, NC	0.003	0.000		0.201	Nov 2017	0.000		-		0.000	0.000	0.204	0.204
Sys Eng P-8A Engine Program	WR	NAWCAD : Patuxent River, MD	1.150	1.150	Nov 2016	0.000		0.600	Oct 2018	-		0.600	Continuing	Continuing	Continuing
Sys Eng Lab Fld Activity-1.0 or more	WR	NAWCAD : Patuxent River, MD	209.090	5.721	Nov 2016	6.448	Nov 2017	4.689	Oct 2018	-		4.689	Continuing	Continuing	Continuing
Sys Eng Other In-House Spt	Various	Various : Various	20.417	0.200	Nov 2016	0.210	Nov 2017	0.220	Nov 2018	-		0.220	Continuing	Continuing	Continuing
GFE*	Reqn	DES/DLA : Various	13.742	0.152	Nov 2016	0.000		1.500	Jan 2019	-		1.500	Continuing	Continuing	Continuing
Prior Year Prod Dev costs no longer funded in the FYDP	Various	Various : Various	62.882	0.000		0.000		0.000		-		0.000	0.000	62.882	-
Sys Eng H-53K Propulsion	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		1.700	Oct 2018	-		1.700	0.000	1.700	-
Sys Eng H-53K Propulsion	SS/CPFF	General Electric : Lynn, MA	0.000	0.000		0.000		6.000	Jan 2019	-		6.000	0.000	6.000	6.000
		Subtotal	1,038.665	88.905		93.850		104.669		-		104.669	Continuing	Continuing	N/A

Remarks

GFE includes expected cost of fuel necessary to support engine development and qualification testing.
Total may be off due to rounding.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various	Various : Various	8.000	0.300	Nov 2016	0.000		0.100	Oct 2018	-		0.100	Continuing	Continuing	Continuing
Development Support	WR	FRC-SW : North Island, CA	0.823	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Development Support	WR	FRC-E : Cherry Point, NC	0.455	0.000		0.000		0.000		-		0.000	0.000	0.455	-
Development Support	WR	NSWC : Crane, IN	0.160	0.000		0.100	Nov 2017	0.200	Oct 2018	-		0.200	0.000	0.460	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 1355 / *Propulsion and Power Component Improvement Program*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	9.438	0.300		0.100		0.300		-		0.300	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	Various	Various : Various	3.392	0.050	Nov 2016	0.000		0.100	Oct 2018	-		0.100	Continuing	Continuing	Continuing
Development Test & Evaluation	WR	NSWC : Crane, IN	0.548	0.000		0.000		0.100	Oct 2018	-		0.100	0.000	0.648	-
		Subtotal	3.940	0.050		0.000		0.200		-		0.200	Continuing	Continuing	N/A

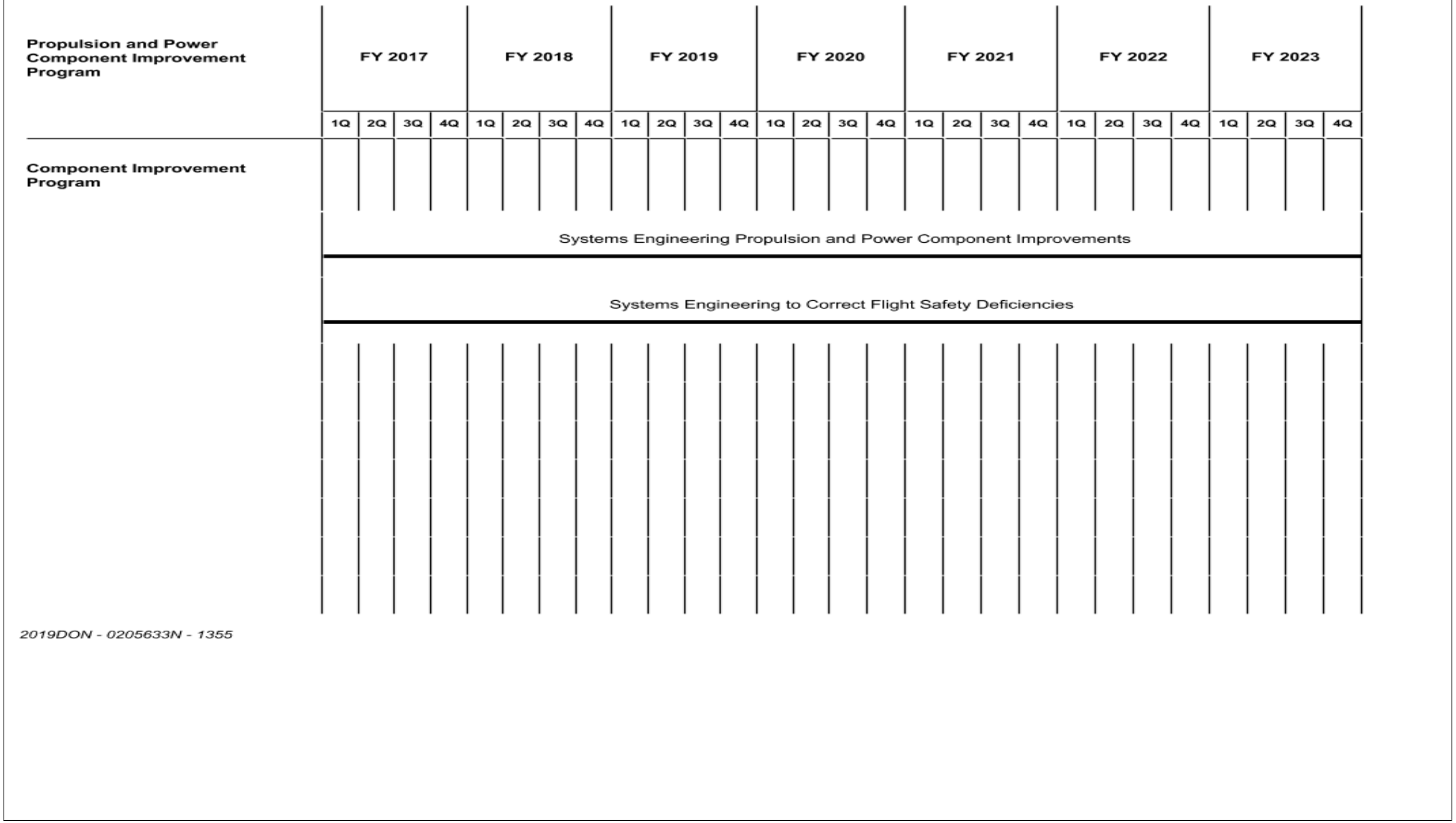
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Various	NAVAIR : Patuxent River, MD	0.733	0.048	Oct 2016	0.051	Oct 2017	0.054	Oct 2018	-		0.054	Continuing	Continuing	Continuing
Prior Year Mgmt cost no longer funded in the FYDP	Various	Various : Various	1.447	0.000		0.000		0.000		-		0.000	0.000	1.447	-
		Subtotal	2.180	0.048		0.051		0.054		-		0.054	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,054.223	89.303		94.001		105.223		-		105.223	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*



2019DON - 0205633N - 1355

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 1355 / *Propulsion and Power Component Improvement Program*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Propulsion and Power Component Improvement Program				
Component Improvement Program: Engine Improvements	1	2017	4	2023
Component Improvement Program: Power & Propulsion	1	2017	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 2269 / *Expeditionary Airfield Improvements*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
2269: *Expeditionary Airfield Improvements*	41.895	14.685	12.359	1.611	-	1.611	2.077	0.854	0.005	0.000	0.000	73.486
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Expeditionary Airfields (EAF) program was a FY2012 New Start, with funding released to the project in May 2012. The EAF program designs, develops and tests a Sustainment Lighting System (SLS) to replace the obsolete legacy EAF lighting system. This system will provide EAF Marine Aircraft Wing Support Squadrons with the required EAF equipment to install Forward Operating Bases and Forward Arming and Refueling Points. With the deployment of this equipment, the Marine Aircraft Wing Support Squadrons can support all United States Marine Corps (USMC) aircraft allowing the Combatant Commanders the flexibility to deploy Aircraft Combat Elements to meet anticipated threats. Milestone B moved from third quarter of fiscal year 2014 to first quarter of 2015 due to contract negotiation delays.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Expeditionary Airfield Improvements	14.685	12.359	1.611	0.000	1.611
Articles:	-	-	-	-	-
Description: The EAF program designs, develops, tests and fields a Sustainment Lighting System (SLS) to replace the obsolete legacy EAF lighting system. This system will provide EAF Marine Aircraft Wing Support Squadrons with the required EAF equipment to install Forward Operating Bases and Forward Arming and Refueling Points. With the deployment of this equipment the Marine Aircraft Wing Support Squadron can support all USMC aircraft allowing the Combatant Commanders the flexibility to deploy Aircraft Combat Elements to meet anticipated threats.					
FY 2018 Plans: Conduct Test Readiness Review (TRR), begin Developmental Testing (DT) and continue the design, development, and integration of the SLS program.					
FY 2019 Base Plans: Continue the design, development, and integration of the SLS program. Begin Operational Testing (OT) and conduct an Operational Test Readiness Review (OTRR)					
FY 2019 OCO Plans: N/A					
FY 2018 to FY 2019 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 2269 / *Expeditionary Airfield Improvements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
The decrease from FY 2018 to FY 2019 is due to the completion of the design and development phase of the SLS program.					
Accomplishments/Planned Programs Subtotals	14.685	12.359	1.611	0.000	1.611

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPN/4213: *ASE-Expeditionary Airfields*	6.866	8.230	8.484	-	8.484	8.474	8.698	8.864	9.049	Continuing	Continuing

Remarks

OPN 4213 includes a portion of line item funding for Expeditionary Airfields.

D. Acquisition Strategy

Expeditionary Airfields (EAF): Cost Plus Incentive Fee contract for the system design, development, integration and testing of the Sustainment Lighting System awarded in December 2014.

E. Performance Metrics

Milestone Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 2269 / *Expeditionary Airfield Improvements*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCAD : Lakehurst, NJ	17.829	6.151	Nov 2016	4.021	Nov 2017	0.487	Nov 2018	-		0.487	0.829	29.317	-
Primary Hardware/ Software Development	C/CPIF	Tactical Lighting Systems, Inc : Addison, Illinois	13.716	6.600	Feb 2017	5.411	Jan 2018	0.515	Jan 2019	-		0.515	0.323	26.565	26.565
Prior year Prod Dev no longer funded in the FYDP	Various	Various : Various	1.700	0.000		0.000		0.000		-		0.000	0.000	1.700	-
		Subtotal	33.245	12.751		9.432		1.002		-		1.002	1.152	57.582	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics	WR	NAWCAD : Lakehurst, NJ	1.958	0.657	Nov 2016	0.545	Nov 2017	0.229	Nov 2018	-		0.229	1.654	5.043	-
Prior Year Support no longer funded in the FYDP	Various	Various : Various	3.637	0.000		0.000		0.000		-		0.000	0.000	3.637	-
		Subtotal	5.595	0.657		0.545		0.229		-		0.229	1.654	8.680	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	WR	NAWCAD : Lakehurst, NJ	1.867	0.859	Nov 2016	1.988	Nov 2017	0.255	Nov 2018	-		0.255	0.125	5.094	-
Opeval Test Support	WR	COMOPTEVFOR : Norfolk, VA	0.126	0.113	Nov 2016	0.166	Nov 2017	0.125	Nov 2018	-		0.125	0.000	0.530	-
		Subtotal	1.993	0.972		2.154		0.380		-		0.380	0.125	5.624	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205633N / *Aviation Improvements*	Project (Number/Name) 2269 / *Expeditionary Airfield Improvements*	

Management Services ($ in Millions)

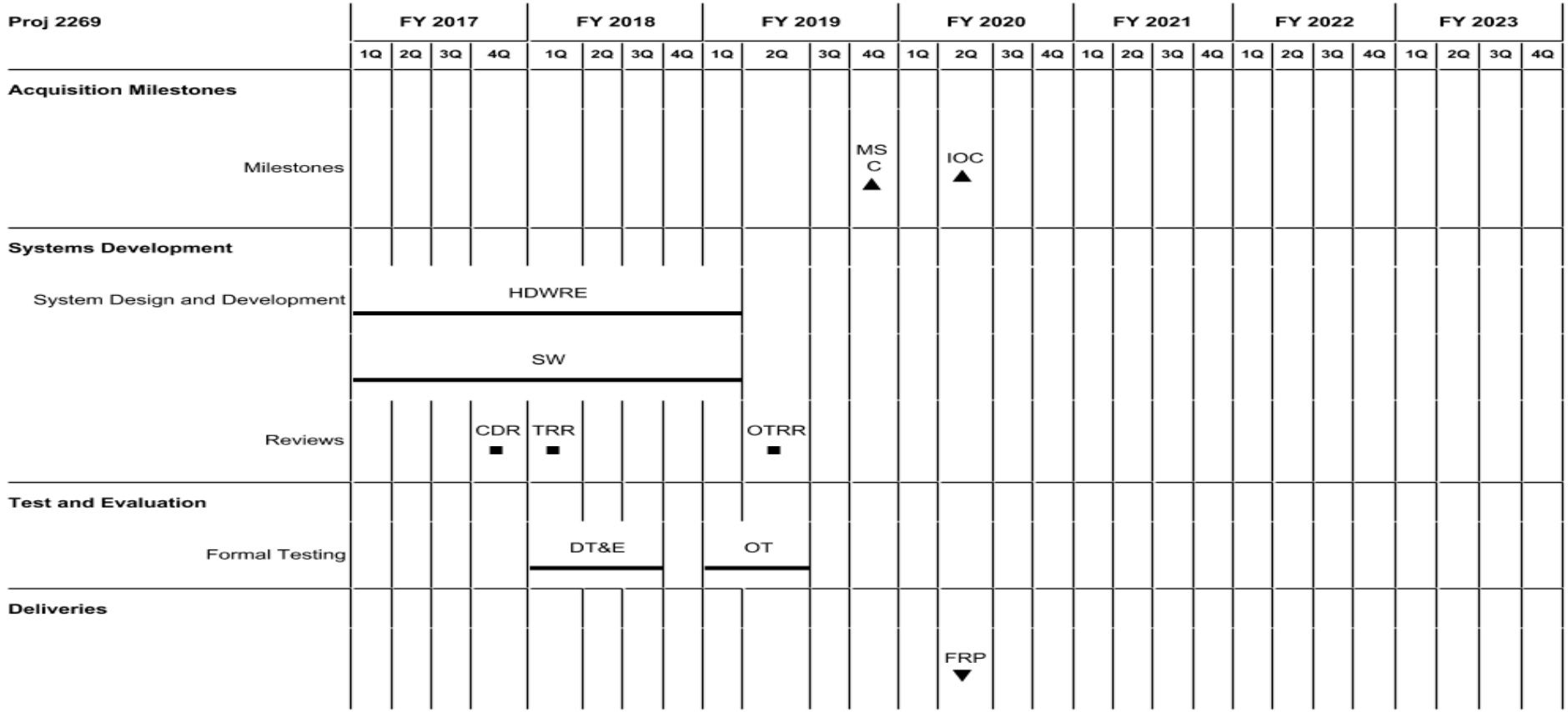
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Support Services	C/CPFF	Various : Various	1.062	0.305	Dec 2016	0.228	Dec 2017	0.000		-		0.000	0.000	1.595	1.595
		Subtotal	1.062	0.305		0.228		0.000		-		0.000	0.000	1.595	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	41.895	14.685		12.359		1.611		-		1.611	2.931	73.481	N/A

Remarks

Prior Year includes $4.9 million of Congressional Add funding.

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 2269 / *Expeditionary Airfield Improvements*



2019DON - 0205633N - 2269

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0205633N / *Aviation Improvements*	**Project (Number/Name)** 2269 / *Expeditionary Airfield Improvements*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2269				
Acquisition Milestones: Milestones: Milestone C	4	2019	4	2019
Acquisition Milestones: Milestones: IOC	2	2020	2	2020
Systems Development: System Design and Development: Hardware Development	1	2017	1	2019
Systems Development: System Design and Development: Software Development	1	2017	1	2019
Systems Development: Reviews: Critical Design Review	4	2017	4	2017
Systems Development: Reviews: Test Readiness Review	1	2018	1	2018
Systems Development: Reviews: Operational Test Readiness Review	2	2019	2	2019
Test and Evaluation: Formal Testing: Tech Eval/Dev T&E	1	2018	3	2018
Test and Evaluation: Formal Testing: Operational Testing	1	2019	2	2019
Deliveries: Delivery: Lot 1	2	2020	2	2020