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 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604218N *I Air/Ocean Equipment Engineering*							
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	250.699	3.747	0.782	17.368	-	17.368	22.433	18.958	18.666	21.377	Continuing	Continuing
2343: *Tactical METOC Applications*	153.449	0.000	0.000	11.054	-	11.054	14.630	14.590	14.203	14.487	Continuing	Continuing
2345: *Fleet METOC Equipment*	62.000	2.609	0.782	0.672	-	0.672	0.692	0.711	0.721	0.736	Continuing	Continuing
2346: *METOC Sensor Engineering*	23.745	1.138	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	24.883
2363: *Remote Sensing Capability Development*	11.505	0.000	0.000	5.642	-	5.642	7.111	3.657	3.742	6.154	Continuing	Continuing

Note

Total funding control for Fleet Meteorology & Oceanography (METOC) Equipment (2343) and Remote Sensing Capability Development (2363) in FY19 and beyond was moved from Program Element (PE) 0603207N AIR/OCEAN TACTICAL APPLICATIONS to PE 0604218N AIR/OCEAN EQUIPMENT ENGINEERING as a result of a Budget Activity (BA) reclassification.

A. Mission Description and Budget Item Justification

The Air/Ocean Equipment Engineering (AOEE) Program Element provides new capabilities to support naval combat forces. This program engineers and developmentally tests organic and remote sensors, communication interfaces, and processing and display devices. This equipment is engineered to measure, ingest, store, process, distribute and display conditions of the physical environment that are essential to the optimum employment and performance of naval warfare systems. AOEE also engineers capabilities for shipboard and shore-based tactical systems. A major area of focus for the AOEE program is to provide the engineering development of specialized equipment and measurement capabilities that are intended to monitor specific conditions of the physical environment in hostile and remote areas in response to fleet demand signals for increased sensing capability and capacity to support battlespace collections and prediction on short to intermediate time scales. With such capabilities, the war fighters' situational awareness of the operational effects of the physical environment are made more certain.

Major emphasis areas include the Naval Integrated Tactical Environmental System Next Generation (NITES-Next), Remote Sensing Capability Development and the Meteorological and Oceanographic Future Mission Capabilities (METOC FMC) project.

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 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604218N *I Air/Ocean Equipment Engineering*		
B. Program Change Summary ($ in Millions)	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**
Previous President's Budget	3.875	0.782	0.690	-	0.690
Current President's Budget	3.747	0.782	17.368	-	17.368
Total Adjustments	-0.128	0.000	16.678	-	16.678
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.128	0.000			
• Program Adjustments	0.000	0.000	16.991	-	16.991
• Rate/Misc Adjustments	0.000	0.000	-0.313	-	-0.313

Change Summary Explanation

The FY 2019 funding request for Fleet METOC Equipment (2343) was reduced by $1.786 million to account for the availability of prior year execution balances.
$2 million increase in project 2363, Remote Sensing Capability Development, FY19 to develop SEAHORSE SURFACE SHIP DETECTION algorithms.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*	Project (Number/Name) 2343 / *Tactical METOC Applications*	

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
2343: *Tactical METOC Applications*	153.449	0.000	0.000	11.054	-	11.054	14.630	14.590	14.203	14.487	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Total funding control for Fleet Meteorology & Oceanography (METOC) Equipment (2343) FY19 and beyond was moved from Program Element (PE) 0603207N AIR/ OCEAN TACTICAL APPLICATIONS to PE 0604218N AIR/OCEAN EQUIPMENT ENGINEERING as a result of a Budget Activity (BA) reclassification.

A. Mission Description and Budget Item Justification

The Tactical Meteorology and Oceanography (METOC) Applications Project provides cyber secure operational effects decision aid capabilities for Navy and Marine Corps warfighters in the context of Joint Operations in a net-centric environment. This project funds the agile software development of the Naval Integrated Tactical Environmental System Next Generation (NITES-Next) program of record. NITES-Next program identifies and transitions state-of-the-art decision support software technologies from the government and commercial industry's technology base, and then demonstrates and validates these capabilities before fielding. These software decision support tools provide platform, sensor, communications, and weapon systems performance assessments for warfighters in terms of their littoral and deep-strike battlespace environments. These assessments allow mission planners and warfighters, from Unit to Theater level, to optimize their sensor employment on airborne, surface, and subsurface platforms in support of Naval Composite Warfare mission areas including Undersea Warfare (USW), Anti-Submarine Warfare (ASW), Mine Warfare (MIW), Amphibious Warfare (AMW), Anti-Surface Warfare (ASUW), Anti-Air Warfare (AAW), Strike Warfare (STW), Expeditionary Warfare (EXW), Electronic Warfare (EW), Information Operations (IO), Intelligence Operations (INT), Non-Combat Operations (NCO), Command, Control, Communication (CCC), and Naval Special Warfare (NSW). Performance assessments leading to improvements in operational and tactical control are conducted through a two-tiered approach: 1) Meteorological and Oceanographic (METOC) Decision Aids and, 2) Operational Effects Decision Aids (OEDAs). METOC Decision Aides consist of a series of analysis tools which characterize the physical environment conditions of the battlespace based on the best set of physical environment data available at the time (i.e., some combination of historical and/or real-time (or near real-time) in-situ, and numerically modeled forecast data). OEDAs use the METOC Decision Aide information by fusing it with relevant, often-classified, sensor and target data to predict how weapons and sensor systems will perform. Performance results are displayed in tabular and graphic formats integrated into net-centric visualization tools for use by mission planners, and combat/weapon system operators to develop localization plans, USW/ AAW/ASUW screens, STW profiles, and AMW ingress and egress points. METOC Decision Aides and OEDAs typically use data derived from sensors developed in Project 2341 (METOC Data Acquisition) and assimilated by software produced by Project 2342 (METOC Data Assimilation and Modeling). METOC Decision Aides and OEDAs also use data obtained through direct interfaces to Navy combat systems. Cyber secure capabilities are a current emphasis required to characterize and/or predict sensor and weapons system performance in the highly complex littoral environments in support of regional conflict scenarios. It addresses multi-warfare areas, particularly shallow water ASW, NSW, and missile and air defense/strike capabilities.

FY 2019 request provides for NITES-Next to continue software development activities on the Fleet Capability Release (FCR)-2 (v2.0.2) and FCR-3 Task Orders in support of deployments. The program will plan for, and begin upgrading all ships (20+) and mobile variant platforms (450+) available. The program will prepare for Field

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2343 / *Tactical METOC Applications*

Technical Review (FTR), FCR-3 Fielding Decision (FD) and FCR-4 Build Decision (BD) in FY20. The NITES-Next program will continue to conduct Systems Integration Test (SIT) and System Qualification Testing (SQT) activities in support of the planned Consolidated Afloat Network and Enterprise Services (CANES) Application Integration (AI)/SIT and Developmental Test and Evaluation (DT&E) events. The program will continue planning for the FCR-4 development and contracting activities (including updating of all required documentation, Requirements Definition Package (RDP), Cost Analysis Requirements Document (CARD), Program Life Cycle Cost Estimate (PLCCE), Technology Readiness Assessment (TRA) Letter, Build Technical Review (BTR) and Authority to Operate (ATO)).

Funding supports development and integration efforts for Meteorological and Oceanographic (METOC) systems to generate and collect METOC data and fuse multiple intelligence inputs to more robustly characterize and predict tactical atmospheric and oceanographic conditions. This integrated METOC picture will support real-time battlespace awareness of propagation conditions affecting signals across the electromagnetic spectrum. METOC data will be fused with other intelligence data and automatically provided to shipboard combat systems to inform kinetic and non-kinetic fires.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Naval Integrated Tactical Environmental System Next Generation (NITES-Next)	0.000	0.000	11.054	0.000	11.054
Articles:	-	-	-	-	-
FY 2018 Plans: N/A					
FY 2019 Base Plans: Naval Integrated Tactical Environmental System Next Generation (NITES-Next) will complete software development activities on the Fleet Capability Release (FCR)-2 (v2.0.2) and continue FCR-3 Task Orders in support of deployments. NITES-Next will complete initial software development of FCR 3 mobile variant which integrates new mobile requirements with the previous afloat version of FCR 2.x. The FCR-3 mobile variant software will also include anti-tamper proofing and will be releasable to our allies to enhance our interoperability with their information warfare systems. The new mobile variant will replace the current Naval Integrated Tactical Environmental System Fielded (NITES-Fielded) suite of systems that have been determined to have cyber vulnerabilities and need to be retired as soon as possible. The program will also begin planning for upgrade to all ships (20+) and mobile variant platforms (450+) available. The NITES-Next program will continue to conduct Systems Integration Test (SIT) and System Qualification Testing (SQT) activities in support of the planned Consolidated Afloat Network and Enterprise Services (CANES) Application Integration (AI)/SIT and Developmental Test and Evaluation (DT&E) events. Additionally, FCR-3 will include the development of an Electromagnetic (EM) Prediction capability to be delivered in FY19/20. The program will prepare for Field Technical Review (FTR), FCR-3 Fielding Decision (FD) and FCR-4 Build Decision (BD) in FY20. The program will continue planning for the FCR-4 development and contracting activities (including updating of all required documentation, Requirements Development Package (RDP), Cost Analysis Requirements Document (CARD),					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2343 / *Tactical METOC Applications*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Program Life Cycle Cost Estimate (PLCCE), Technology Readiness Assessment (TRA) Letter, Build Technical Review (BTR) and Authority to Operate (ATO). The program will begin planning for FCR-5 development and contracting activities. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding reduction to account for the availability of prior year execution balances will not impact the program due to use of previous balances.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	11.054	0.000	11.054

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Naval Integrated Tactical Environmental System Next Generation (NITES-Next) program acquisition, management and contracting strategies are to support the Tactical Meteorology & Oceanography (METOC) Applications project to continue the development of state-of-the-art software capabilities that provide sensor, communication, and weapon system performance assessment capabilities for open ocean and littoral operating environments. The Department of the Navy (DoN) maintains management oversight of the NITES-Next program's acquisition and contracting strategies. The Department of the Navy (DoN) requirements for the Naval Integrated Tactical Environmental System Next Generation (NITES-Next) program's acquisition and contracting strategies are based on approved Joint Capabilities Integration and Development System (JCIDS) documentation.

E. Performance Metrics

Goal: Field software decision aid capabilities for Navy and Marine Corps war fighters in order to facilitate the characterization and prediction of the physical environment in the battlespace.

Metric: Meet the performance metrics identified in approved NITES-Next Program's requirements documents (e.g., Concept Definition Document (CDD) and individual Requirements Definition Packages (RDPs)).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*	Project (Number/Name) 2343 / *Tactical METOC Applications*	

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
NITES-Next	WR	SSC Pacific : San Diego, CA	19.734	0.000		0.000		2.695	Nov 2018	-		2.695	Continuing	Continuing	Continuing
NITES-Next	C/FP	SAIC : Virginia	7.444	0.000		0.000		2.145	Dec 2018	-		2.145	Continuing	Continuing	Continuing
NITES-Next	WR	SSC Atlantic : South Carolina	0.271	0.000		0.000		0.095	Oct 2018	-		0.095	Continuing	Continuing	Continuing
NITES-Next / Engineering	C/IDIQ	SSC Pacific : Various	0.000	0.000		0.000		4.050	May 2019	-		4.050	Continuing	Continuing	Continuing
Prodict Development Prior Year	Various	various : Various	117.115	0.000		0.000		0.000		-		0.000	0.000	117.115	-
		Subtotal	144.564	0.000		0.000		8.985		-		8.985	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
Support Prior Year	Various	Various : Various	0.720	0.000		0.000		0.000		-		0.000	0.000	0.720	-
NITES-Next	C/FP	SAIC : Virginia	5.224	0.000		0.000		1.257	Dec 2018	-		1.257	Continuing	Continuing	Continuing
		Subtotal	5.944	0.000		0.000		1.257		-		1.257	Continuing	Continuing	N/A

Management Services ($ in Millions)

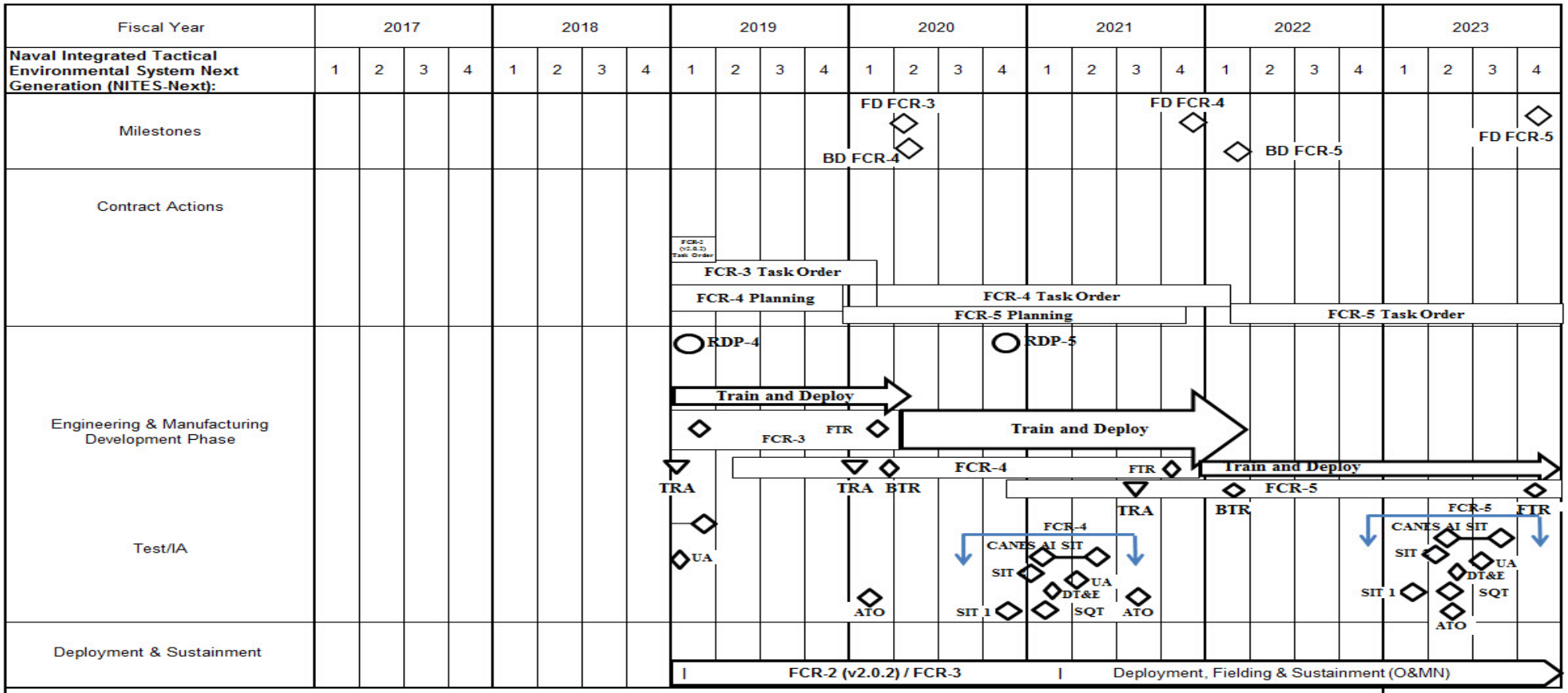
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services Prior Year	Various	Various : Various	0.031	0.000		0.000		0.000		-		0.000	0.000	0.031	-
NITES-Next	WR	SSC Pacific : San Diego, CA	1.140	0.000		0.000		0.309	Nov 2018	-		0.309	Continuing	Continuing	Continuing
NITES-Next	C/FP	BAH : Ssan Diego, CA	1.770	0.000		0.000		0.503	Dec 2018	-		0.503	Continuing	Continuing	Continuing
		Subtotal	2.941	0.000		0.000		0.812		-		0.812	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*	Project (Number/Name) 2343 / *Tactical METOC Applications*	

	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	153.449	0.000		0.000		11.054		-		11.054	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2343 / *Tactical METOC Applications*



Acronyms: OTRR = Opertional Test Readiness Review. RDP = Requirements Definition Package. FCR = Fleet Capability Release. TRA = Technology Readiness Assessment. BD = Build Decision. FD = Fielding Decision. Limited Fielding Decision = LFD. IOC= Initial Operational Capability. IATO = Interim Authority to Operate. ATO = Authority to Operate. UA = User Assessment. BTR = Build Technical Review. Field Technical Reivew = FTR. SIT = System Integration Test. RALOT = Risk Assessment Level of Testing. DT&E = Developmental Test & Evaluation. ADM - Acquisition Decision Memorandum. SOVT = System Verification Operational Test. CANES = Consolidated Afloat Networks and Enterprise Services. AI = Application Integration.

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2343 / *Tactical METOC Applications*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Naval Integrated Tactical Environmental System Next Generation (NITES-Next)				
Milestones: Build Decision (BD) Fleet Capability Release - 4	2	2020	2	2020
Milestones: Fielding Decision (FD) Fleet Capability Release - 3	2	2020	2	2020
Milestones: Fielding Decision (FD) Fleet Capability Release - 4	4	2021	4	2021
Milestones: Building Decision (BD) Fleet Capability Release - 5	1	2022	1	2022
Milestones: Fielding Decision (FD) Fleet Capability Release - 5	4	2023	4	2023
Contract Actions: FCR-2 Task Order (v2.0.2)	1	2019	1	2019
Contract Actions: FCR-3 Task Order	1	2019	1	2020
Contract Actions: FCR-4 Task Order	1	2020	1	2022
Contract Actions: FCR-4 Planning	1	2019	4	2019
Contract Actions: FCR-5 Planning	4	2019	4	2021
Contract Actions: FCR-5 Task Order	1	2022	4	2023
Engineering & Manufacturing Development Phase: Fleet Capability Release - 2 / Train Deploy	1	2019	2	2020
Engineering & Manufacturing Development Phase: Fleet Capability Release - 3 / Train Deploy	1	2019	1	2022
Engineering & Manufacturing Development Phase: Fleet Capability Release - 4 / Train and Deploy	2	2019	4	2023
Engineering & Manufacturing Development Phase: Fleet Capability Release - 5	4	2020	4	2023
Engineering & Manufacturing Development Phase: Requirements Definition Package - 4	1	2019	1	2019
Engineering & Manufacturing Development Phase: Requirements Definition Package - 5	4	2020	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2343 / *Tactical METOC Applications*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Engineering & Manufacturing Development Phase: Build Technical Review FCR-4	1	2020	1	2020
Engineering & Manufacturing Development Phase: Build Technical Review FCR-5	1	2022	1	2022
Engineering & Manufacturing Development Phase: Technology Readiness Assessment - 4	1	2020	1	2020
Engineering & Manufacturing Development Phase: Technology Readiness Assessment - 5	3	2021	3	2021
Engineering & Manufacturing Development Phase: Field Technical Review FCR-3	1	2020	1	2020
Engineering & Manufacturing Development Phase: Field Technical Review FCR-4	4	2021	4	2021
Engineering & Manufacturing Development Phase: Field Technical Review FCR-5	4	2023	4	2023
Test/IA: Fleet Capability Release - 3	1	2019	2	2019
Test/IA: Fleet Capability Release - 4	3	2020	3	2021
Test/IA: Fleet Capability Release - 5	4	2022	4	2023
Test/IA: System Integration Test - 1 (FCR-4)	4	2020	4	2020
Test/IA: System Integration Test - 2 (FCR4)	1	2021	1	2021
Test/IA: System Integration Test - 1 (FCR5)	1	2023	1	2023
Test/IA: System Integration Test - 2 (FCR5)	2	2023	2	2023
Test/IA: Authority to Operate FCR-3	1	2020	1	2020
Test/IA: Authority to Operate FCR-4	3	2021	3	2021
Test/IA: Authority to Operate FCR-5	2	2023	2	2023
Test/IA: System Qualification Test FCR-4	1	2021	1	2021
Test/IA: System Qualification Test FCR-5	2	2023	2	2023
Test/IA: Developmental Test Fleet Capability Release - FCR-4	1	2021	1	2021
Test/IA: Developmental Test Fleet Capability Release - FCR-5	2	2023	2	2023
Test/IA: User Assessment FCR-3	1	2019	1	2019
Test/IA: User Assessment FCR-4	2	2021	2	2021
Test/IA: User Assessment FCR-5	3	2023	3	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2343 / *Tactical METOC Applications*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test/IA: CANES AI SIT FCR-3	1	2019	1	2019
Test/IA: CANES AI SIT FCR-4	1	2021	2	2021
Test/IA: CANES AI SIT FCR-5	2	2023	3	2023
Deployment and Sustainment: Deployment, fielding and Sustainment (OMN)	1	2019	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*	Project (Number/Name) 2345 / *Fleet METOC Equipment*	

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
2345: *Fleet METOC Equipment*	62.000	2.609	0.782	0.672	-	0.672	0.692	0.711	0.721	0.736	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides for the engineering and manufacturing development of sensors, communication interfaces, processing and display meteorological and oceanographic (METOC) equipment. This equipment is designed to provide future mission capabilities for war fighters to measure, ingest, store, process, distribute and display METOC parameters and derived products.

This project also exploits new government off-the-shelf /commercial off-the-shelf technologies, tactical sensors and web enablement for the Navy's computer-based tactical shipboard and shore capability used to predict and assess the operational effects of the physical environment on the performance of platforms, weapons and sensor systems. This project includes development of warfare specific mission planning modules to support unmanned systems with integration of data from environmental and tactical sensor systems, model forecast information and Geospatial Information & Services Databases. This project also supports development of autonomous environmental sensing systems for situational awareness and tactical decision aid/mission planner support, as well as iridium and advanced satellite communication integration in METOC sensor, vehicle control and mission planning systems that will be required to achieve Chief of Naval Operation objectives for information dominance and decision superiority.

Major emphasis areas include the Meteorological and Oceanographic Future Mission Capabilities (METOC FMC) project, Littoral Battlespace Sensors - Unmanned Undersea Vehicles (LBS-UUV) and the Environmental Satellite Receiver Processor (ESRP) (comprised of AN/SMQ-11 (sea and shore configuration) and AN/FMQ-17 (shore configuration)) program.

FY 2019 request provides for the Littoral Battlespace Sensors - Gliders (LBS-G), Littoral Battlespace Sensors - Autonomous Undersea Vehicles (LBS-AUV), and LBS-AUV(S) (Razorback) engineering design studies. Develop system upgrades via Engineering Change Proposals (ECP's) and correct any identified software and/or hardware deficiencies. Continue investigating next generation propulsion technologies such as Hybrid Thruster, battery chemistry, thermal engines, and universal buoyancy engines for potential system upgrades. Also, investigating battery technology, bio-fouling solutions, afterbody solutions, and open architecture approaches.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Meteorological and Oceanographic (METOC) Future Mission Capabilities (FMC)	0.388	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2018 Plans: N/A					
FY 2019 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

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 OCO Plans:*** N/A					
Title: Littoral Battlespace Sensors - Unmanned Undersea Vehicle (LBS-UUV)	1.956	0.463	0.358	0.000	0.358
Articles:	-	-	-	-	-
FY 2018 Plans: Conduct LBS-G and LBS-AUV engineering design studies. Develop system upgrades via Engineering Change Proposals (ECP's) and correct any identified software and/or hardware deficiencies. Investigate next generation propulsion technologies such as Hybrid Thruster, battery chemistry, thermal engines, and universal buoyancy engines for potential system upgrades. ***FY 2019 Base Plans:*** Conduct LBS-G, LBS-AUV, and LBS-AUV(S) (Razorback) engineering design studies. Develop system upgrades via Engineering Change Proposals (ECP's) and correct any identified software and/or hardware deficiencies. Continue investigating next generation propulsion technologies such as Hybrid Thruster, battery chemistry, thermal engines, and universal buoyancy engines for potential system upgrades. Also, investigating battery technology, bio-fouling solutions, afterbody solutions, and open architecture approaches. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Reduction in funding from FY18 to FY19 will reduce the amount of investigating into next generation propulsion technologies such as Hybrid Thruster, battery chemistry, thermal engines, and universal buoyancy engines for potential system upgrades.					
Title: Environmental Satellite Receiver Processor (ESRP)	0.265	0.319	0.314	0.000	0.314
Articles:	-	-	-	-	-
FY 2018 Plans: Continue to develop and test annual hardware and software upgrades to integrate new METOC Satellite Sensors available in the GOES and the POES. Continue integration of ESRP systems in support of Defense Weather Satellite System (DWSS), which has replaced JPSS, and EUMETSAT. Overall program efforts include					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
investigation of emerging technologies through study, development and associated testing for feasibility of program insertion. ***FY 2019 Base Plans:*** Continue to develop and test annual hardware and software upgrades to integrate new METOC Satellite Sensors available in the GOES and the POES. Continue integration of ESRP systems in support of Weather Satellite (WS) Follow-On (formerly known as Defense Weather Satellite System (DWSS), which replaced JPSS), and EUMETSAT. Overall program efforts include investigation of emerging technologies through study, development and associated testing for feasibility of program insertion. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease from FY18 to FY19 reduces Other Direct Costs (ODCs) travel funding associated with hardware/ software upgrade testing not required in FY19.					
Accomplishments/Planned Programs Subtotals	2.609	0.782	0.672	0.000	0.672

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/4226: *Meteorological Equipment*	29.015	21.137	21.072	-	21.072	36.470	47.657	20.360	20.860	Continuing	Continuing
• RDTEN/0603207N/2341: *METOC Data Acquisition*	4.268	5.483	3.471	2.500	5.971	5.836	5.741	5.948	7.859	Continuing	Continuing
• RDTEN/0603207N/2342: *METOC Data Assimilation and MOD*	20.082	21.111	17.441	-	17.441	20.461	21.596	21.495	22.441	Continuing	Continuing
• RDTEN/0604218N/2346: *METOC Sensor Engineering*	1.138	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	24.883

Remarks

D. Acquisition Strategy

Acquisition, management and contracting strategies are to support engineering and manufacturing development by providing funds to Naval Research Laboratories and miscellaneous contractors, with management oversight by the Office of Naval Research.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

E. Performance Metrics

Goal: Develop and engineer equipment to acquire meteorological and oceanographic (METOC) data in order to improve the accuracy of global and regional scale Meteorological and Oceanographic forecast models.

Metric: Tasks will address no less than 75% of applicable capability gaps and requirements, as identified by Resource and Requirements Sponsor(s). As tasks relate to exploitation of fleet sensors for METOC data (Through-the-Sensor), no less than 80% of approved initiatives will maintain cost, schedule, performance and transition risk analysis certification that will have been completed within the past 12 months.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

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
METOC Future Mission Capabilities (DBR)	WR	Naval Research Laboratory : Monterey, CA	23.133	0.388	Nov 2016	0.000		0.000		-		0.000	0.000	23.521	-
METOC Future Mission Capabilities	Various	Various : Various	33.009	0.000		0.000		0.000		-		0.000	0.000	33.009	-
Littoral Battlespace Sensing - Gliders	C/CPIF	Teledyne Brown Engineering : Alabama	0.618	0.988	Mar 2017	0.247	Mar 2018	0.226	Mar 2019	-		0.226	Continuing	Continuing	Continuing
Littoral Battlespace Sensing - Autonomous Undersea Vehicle	C/FP	Hydroid : Pocasset, MA	0.735	0.968	Mar 2017	0.216	Mar 2018	0.000		-		0.000	0.000	1.919	Continuing
Littoral Battlespace Sensing - Autonomous Undersea Vehicle	C/CPFF	TBD : TBD	0.000	0.000		0.000		0.132	Mar 2019	-		0.132	Continuing	Continuing	Continuing
METOC ESRP	SS/CPFF	RAYTHEON : Indianapolis	1.362	0.265	Feb 2017	0.319	Feb 2018	0.314	Feb 2019	-		0.314	Continuing	Continuing	Continuing
		Subtotal	58.857	2.609		0.782		0.672		-		0.672	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
METOC Future Mission Capabilities	C/CPFF	SSA/CSC : MISC	1.312	0.000		0.000		0.000		-		0.000	0.000	1.312	-
Littoral Battlespace Sensing - Autonomous Undersea Vehicle	Various	Various : Various	0.767	0.000		0.000		0.000		-		0.000	0.000	0.767	-
		Subtotal	2.079	0.000		0.000		0.000		-		0.000	0.000	2.079	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*	Project (Number/Name) 2345 / *Fleet METOC Equipment*	

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 & Evaluation	WR	OPTEVFOR : Virginia	0.424	0.000		0.000		0.000		-		0.000	0.000	0.424	-
Littoral Battlespace Sensing - Unmanned Undersea Vehicle	WR	NSWC Carderock : Maryland	0.150	0.000		0.000		0.000		-		0.000	0.000	0.150	-
METMF R NEXGEN	C/FP	Smiths Detection : Rhode Island	0.090	0.000		0.000		0.000		-		0.000	0.000	0.090	-
		Subtotal	0.664	0.000		0.000		0.000		-		0.000	0.000	0.664	N/A

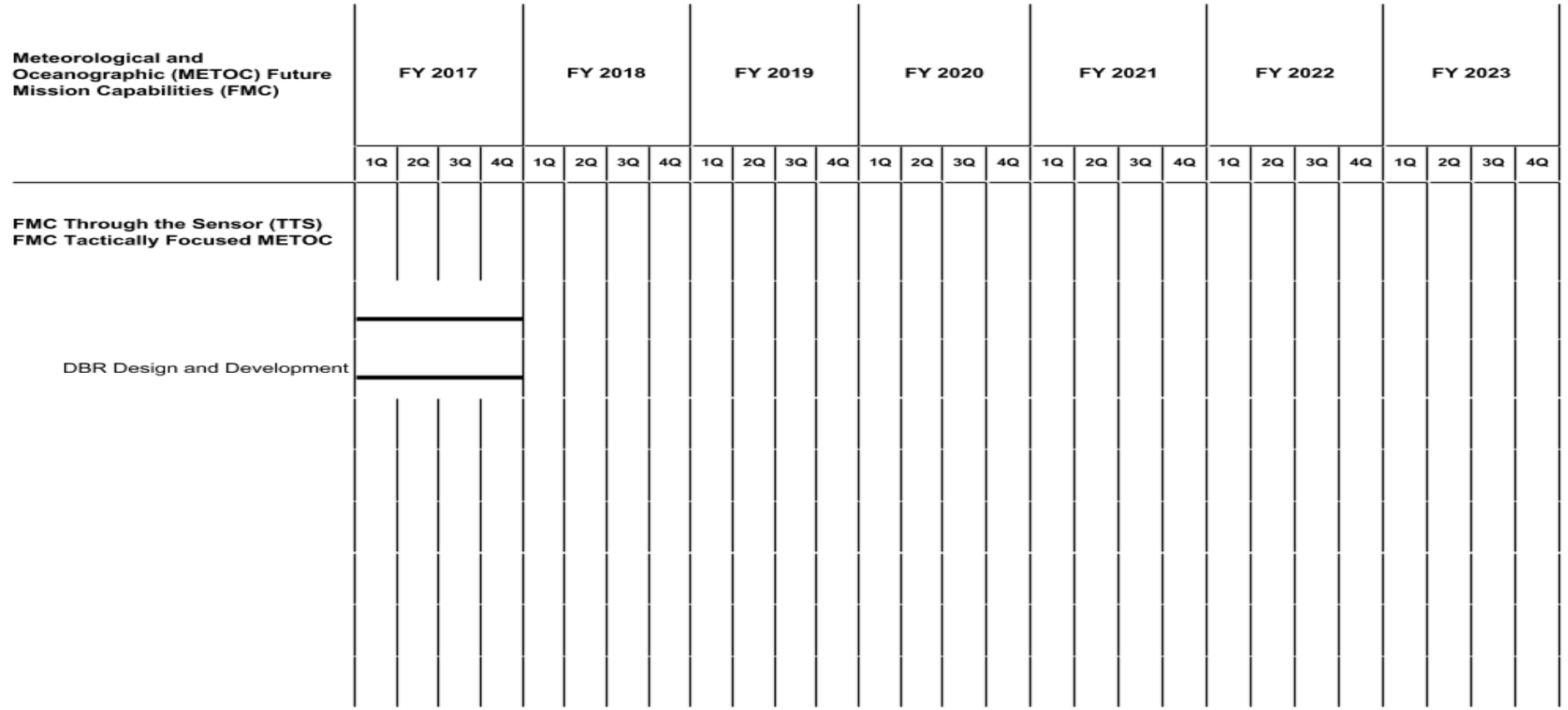
Management Services ($ in Millions)

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
Management Services	C/CPFF	SAIC : Virginia	0.400	0.000		0.000		0.000		-		0.000	0.000	0.400	-
		Subtotal	0.400	0.000		0.000		0.000		-		0.000	0.000	0.400	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	62.000	2.609		0.782		0.672		-		0.672	Continuing	Continuing	N/A

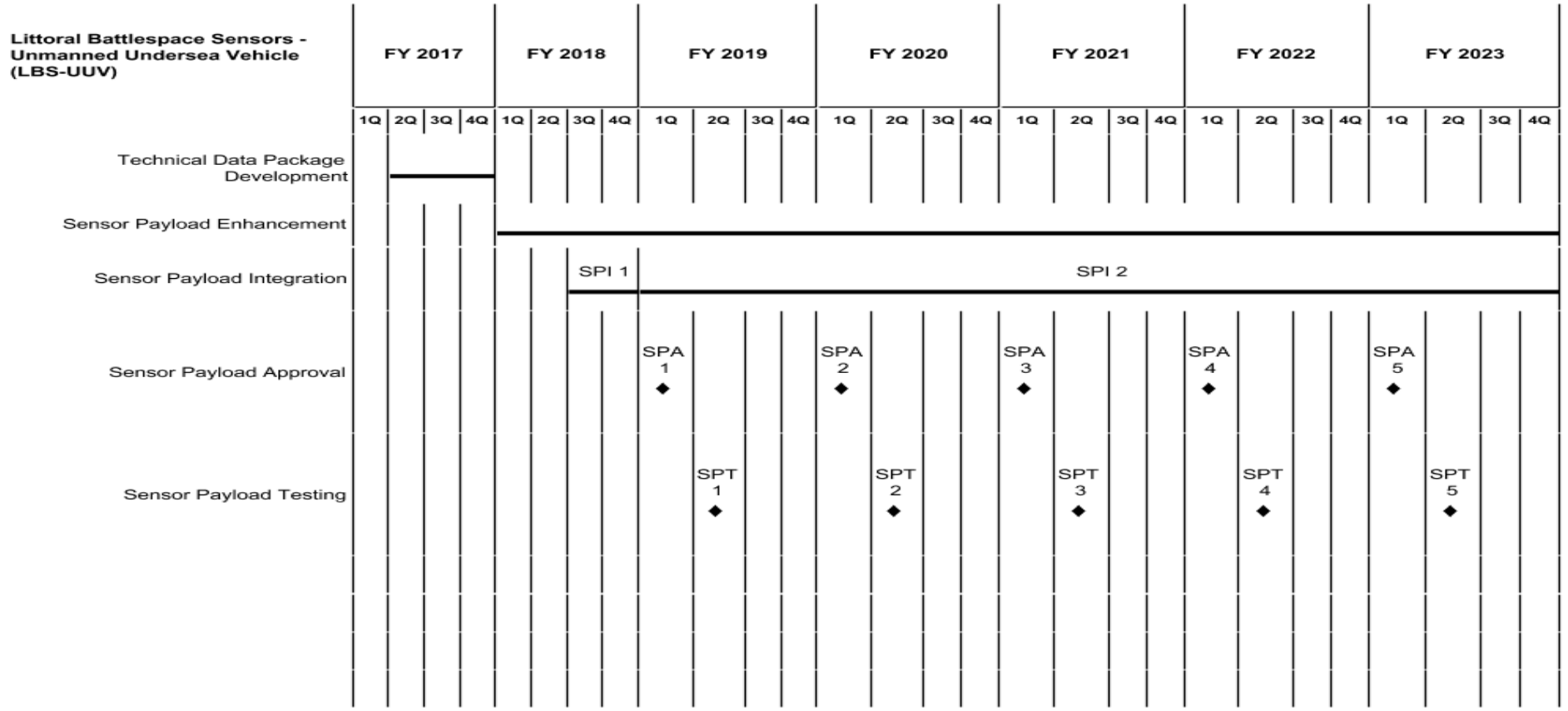
Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*



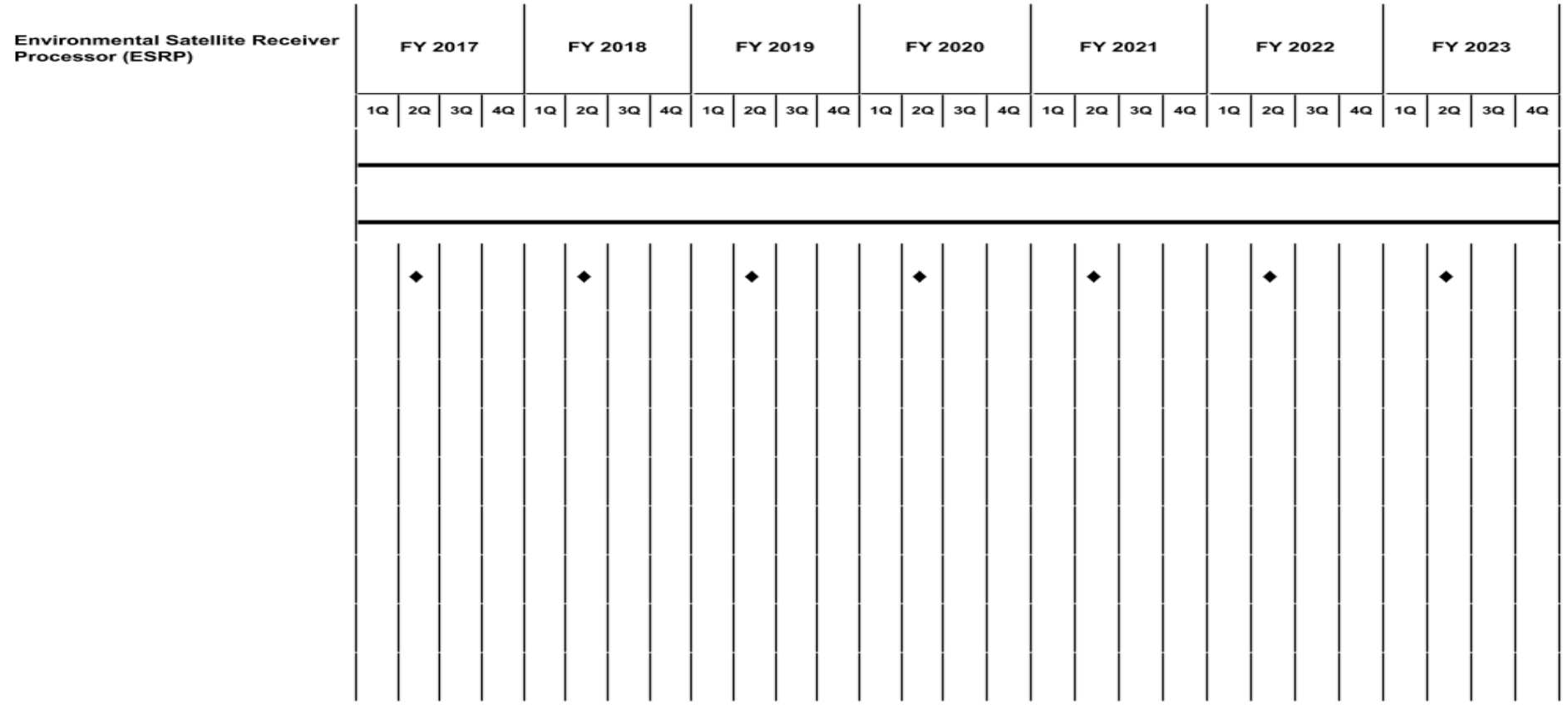
2019PB - 0604218N - 2345

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*



2019PB - 0604218N - 2345

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*



2019PB - 0604218N - 2345

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Meteorological and Oceanographic (METOC) Future Mission Capabilities (FMC)				
FMC Through the Sensor (TTS) FMC Tactically Focused METOC:	1	2017	4	2017
FMC Through the Sensor (TTS) FMC Tactically Focused METOC: DBR Design and Development: Schedule Detail	1	2017	4	2017
Littoral Battlespace Sensors - Unmanned Undersea Vehicle (LBS-UUV)				
Technical Data Package Development:	2	2017	4	2017
Sensor Payload Enhancement:	1	2018	4	2023
Sensor Payload Integration: Sensor Payload Integration1	3	2018	4	2018
Sensor Payload Integration: Sensor Payload Integration 2	1	2019	4	2023
Sensor Payload Approval: Sensor Payload Approval 1	1	2019	1	2019
Sensor Payload Approval: Sensor Payload Approval 2	1	2020	1	2020
Sensor Payload Approval: Sensor Payload Approval 3	1	2021	1	2021
Sensor Payload Approval: Sensor Payload Approval 4	1	2022	1	2022
Sensor Payload Approval: Sensor Payload Approval 5	1	2023	1	2023
Sensor Payload Testing: Sensor Payload Testing 1	2	2019	2	2019
Sensor Payload Testing: Sensor Payload Testing 2	2	2020	2	2020
Sensor Payload Testing: Sensor Payload Testing 3	2	2021	2	2021
Sensor Payload Testing: Sensor Payload Testing 4	2	2022	2	2022
Sensor Payload Testing: Sensor Payload Testing 5	2	2023	2	2023
Environmental Satellite Receiver Processor (ESRP)				
ESRP Sensors in View Development	1	2017	4	2023
ESRP Sensors in View Integration	1	2017	4	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ESRP Satellite Testing (FY17)	2	2017	2	2017
ESRP Satellite Testing (FY18)	2	2018	2	2018
ESRP Satellite Testing (FY19)	2	2019	2	2019
ESRP Satellite Testing (FY20)	2	2020	2	2020
ESRP Satellite Testing (FY21)	2	2021	2	2021
ESRP Satellite Testing (FY22)	2	2022	2	2022
ESRP Satellite Testing (FY23)	2	2023	2	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*				Project (Number/Name) 2346 / *METOC Sensor Engineering*			
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**
2346: *METOC Sensor Engineering*	23.745	1.138	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	24.883
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides for the engineering and manufacturing development of specialized, high resolution instrumentation systems and measurement capabilities for obtaining near real-time, in-situ Meteorological and Oceanographic (METOC) data in hostile, remote, and denied areas. The project's objectives are to engineer near term future mission sensing capabilities that are intended to survive the harsh littoral and deep-strike environments and also to meet demanding requirements for timeliness and accuracy. Engineering is performed within this project to ensure that air and safety certification for deployment from fleet aircraft or ships is met and that the proper data formats are engineered for electronic communications transmissions, human interface displays, and inputs to predictive models. The major area of emphasis is the METOC Future Mission Capabilities (FMC) project.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**
Title: Meteorological and Oceanographic (METOC) Future Mission Capabilities (FMC)	1.138	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The Navy decided to discontinue the FMC project label, starting in 2018. This was done as part of an effort to restructure METOC research and development funding into the Tasking, Collection, Prediction, Exploitation, and Dissemination (TCPED) construct coming into common use throughout Naval Information Forces. This restructuring for FY18 moves METOC RDT&E into PE 0603207N AIR/OCEAN TACTICAL APPLICATIONS					
FY 2018 Plans: N/A					
FY 2019 Base Plans: N/A					
FY 2019 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.138	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2346 / *METOC Sensor Engineering*

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
• RDTEN/0603207N/2341: *METOC DATA ACQUISITION*	4.437	5.467	5.316	-	5.316	5.341	5.447	5.556	0.000	Continuing	Continuing
• RDTEN/0603207N/2342: *METOC DATA ASSIMILATION AND MOD*	20.165	19.997	20.869	-	20.869	21.221	21.698	22.162	0.000	Continuing	Continuing
• RDTEN/0604218N/2345: *FLEET METOC EQUIPMENT*	2.692	0.736	0.723	-	0.723	0.691	0.704	0.718	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

Acquisition and contracting strategies are to support engineering and manufacturing development of specialized, high resolution instrumentation systems and measurement techniques for obtaining near real-time in-situ Meteorological and Oceanographic (METOC) data in denied or remote areas by providing funds to miscellaneous performers.

E. Performance Metrics

Goal: Develop and engineer unique sensors to acquire METOC data in order to improve the accuracy of global and regional scale meteorological and oceanographic forecast models.

Metric: Tasks will address no less than 75% of applicable capability gaps and requirements, as identified by Resource Sponsor and Type Commander(s). No less than 75% of sensor engineering initiatives will be informed by an Analysis of Alternatives or market study to assess the state of the technology.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2346 / *METOC Sensor Engineering*

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
Product Development	WR	Naval Research Laboratory : Monterey, CA	10.276	1.138	Nov 2016	0.000		0.000		-		0.000	0.000	11.414	-
Product Development	Various	Various : Various	11.750	0.000		0.000		0.000		-		0.000	0.000	11.750	-
Product Development	C/CPFF	University of Washington : Washington	0.225	0.000		0.000		0.000		-		0.000	0.000	0.225	-
Product Development	WR	NSWC Carderock : Maryland	0.230	0.000		0.000		0.000		-		0.000	0.000	0.230	-
Product Development	WR	SSC PAC : San diego, CA	0.982	0.000		0.000		0.000		-		0.000	0.000	0.982	-
Product Development	WR	NPS : Monterey, CA	0.063	0.000		0.000		0.000		-		0.000	0.000	0.063	-
Product Development	C/CPFF	OWEN, LLC : New Jersy	0.200	0.000		0.000		0.000		-		0.000	0.000	0.200	-
		Subtotal	23.726	1.138		0.000		0.000		-		0.000	0.000	24.864	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
Acquisition Workforce	C/CPFF	Not Specified : Not Specified	0.008	0.000		0.000		0.000		-		0.000	0.000	0.008	0.008
METOC Future Mission Capabilities	C/CPFF	Various : Various	0.011	0.000		0.000		0.000		-		0.000	0.000	0.011	-
		Subtotal	0.019	0.000		0.000		0.000		-		0.000	0.000	0.019	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	23.745	1.138		0.000		0.000		-		0.000	0.000	24.883	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2346 / *METOC Sensor Engineering*

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Meteorology and Oceanographic (METOC) Future Mission Capabilities (FMC)																												
Advanced METOC Sensor Deployment, Data Processing, & Performance Metrics:																												
Assess Viability of METOC Sensors & Subsystems on Aircraft Systems and Undersea Platforms:																												
Develop Infrastructure to Acquire, Process, and Distribute METOC Data:																												

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2346 / *METOC Sensor Engineering*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Meteorology and Oceanographic (METOC) Future Mission Capabilities (FMC)				
Advanced METOC Sensor Deployment, Data Processing, & Performance Metrics:	1	2017	4	2017
Assess Viability of METOC Sensors & Subsystems on Aircraft Systems and Undersea Platforms:	1	2017	4	2017
Develop Infrastructure to Acquire, Process, and Distribute METOC Data:	1	2017	4	2017

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*	Project (Number/Name) 2363 / *Remote Sensing Capability Development*	

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
2363: *Remote Sensing Capability Development*	11.505	0.000	0.000	5.642	-	5.642	7.111	3.657	3.742	6.154	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Total funding control for Remote Sensing Capability Development (2363) in FY19 and beyond was moved from Program Element (PE) 0603207N AIR/OCEAN TACTICAL APPLICATIONS to PE 0604218N AIR/OCEAN EQUIPMENT ENGINEERING as a result of a Budget Activity (BA) reclassification.

A. Mission Description and Budget Item Justification

Remote Sensing Capability Development characterizes the ocean environment using a variety of remote sensing techniques that provide that capability to discriminate atypical oceanographic phenomena from the natural environment that will greatly improve undersea dominance capabilities. The Naval Oceanographic Office will employ oceanographic data to refine and extend environmental characterization of the phenomena and disseminate data to the Fleet.

FY 2019 request provides for continued target data collection, enhancements on algorithms and continue to integrate algorithms for access over the network.

FY19 funds are to develop and deliver algorithms in support of the Remote Sensing Capability Development (RSCD) project and will support Fleet Anti-Submarine Warfare (ASW) and Mine Warfare (MIW) missions.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Remote Sensing Capability Development	0.000	0.000	5.642	0.000	5.642
Articles:	-	-	-	-	-
FY 2018 Plans: N/A					
FY 2019 Base Plans: Continue data collection in various weather and sea states to broaden the range of environmental conditions and reduce uncertainty in environmental prediction. Continue software algorithm performance analysis. Continue software algorithm enhancements to automatically detect oceanographic phenomena. Continue software algorithm enhancements and modifications to support transition to a new architecture. Continue to implement the algorithm performance assessment strategy as well as the test and evaluation plans. Document software algorithm test reports. Continue to integrate algorithms for access over the network. Continue development of training to provide the user community education on using the different tools and applications. Coordinate Task,					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2363 / *Remote Sensing Capability Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Collect, Process, Exploit, Disseminate (TCPED) process amongst inter-agencies to support Navy Missions. Based on emerging threats, expand scope of the Seahorse to include new surface detection algorithms. Continue to develop, enhance, and integrate, surface detection algorithm capabilities, and provide input to Fleet training and CONOPS development. Effort introduces rigor and standardization of target detection capabilities in support of CLUTCHSHOT. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding increased from FY18 (PE 0603207N AIR/OCEAN TACTICAL APPLICATIONS) to FY19 to expand scope of surface ship detection algorithms for SEAHORSE/Remote Sensing Capability Development based on emerging threats.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	5.642	0.000	5.642

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Remote Sensing Capability Development is being managed as a Program Executive Office (PEO) Project, via a Project Definition Document (PDD) construct for acquisition rigor and oversight.

E. Performance Metrics

Available in the Project's Requirements Definition Package (RDP).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*	Project (Number/Name) 2363 / *Remote Sensing Capability Development*	

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
Remote Sensing Capability Development Data Collection	C/FFP	SAIC : Virginia	1.284	0.000		0.000		0.816	Feb 2019	-		0.816	Continuing	Continuing	Continuing
Remote Sensing Capability Development Data Collection	WR	NRL : Washington, DC	1.212	0.000		0.000		1.269	Nov 2018	-		1.269	Continuing	Continuing	Continuing
Remote Sensing Capability Development Data Collection	C/FFP	Cubic : San Diego, CA	7.070	0.000		0.000		1.410	Apr 2019	-		1.410	Continuing	Continuing	Continuing
		Subtotal	9.566	0.000		0.000		3.495		-		3.495	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
Remote Sensing Capability Development Data Collection	WR	SSC PAC : San Diego, CA	0.472	0.000		0.000		0.888	Mar 2019	-		0.888	0.000	1.360	-
		Subtotal	0.472	0.000		0.000		0.888		-		0.888	0.000	1.360	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
Remote Sensing Capability Development Data Collection	WR	SSC PAC : San Diego, CA	1.122	0.000		0.000		1.259	Mar 2019	-		1.259	Continuing	Continuing	Continuing
		Subtotal	1.122	0.000		0.000		1.259		-		1.259	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*	Project (Number/Name) 2363 / *Remote Sensing Capability Development*	

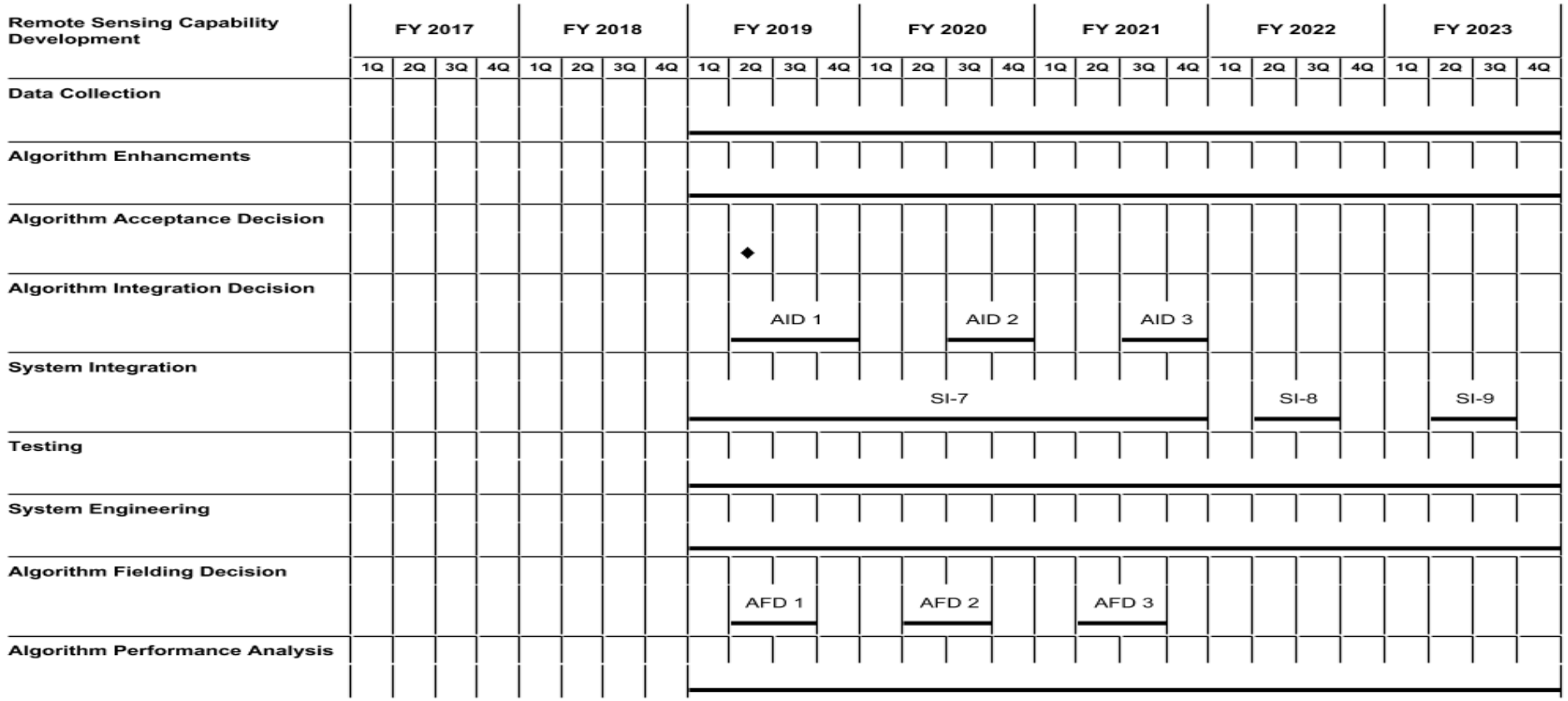
Management Services ($ in Millions)

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
Remote Sensing Capability Development Data Collection	C/FP	BAH : Virginia	0.345	0.000		0.000		0.000		-		0.000	0.000	0.345	-
		Subtotal	0.345	0.000		0.000		0.000		-		0.000	0.000	0.345	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	11.505	0.000		0.000		5.642		-		5.642	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2363 / *Remote Sensing Capability Development*



2019PB - 0604218N - 2363

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2363 / *Remote Sensing Capability Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Remote Sensing Capability Development				
Data Collection:	1	2019	4	2023
Algorithm Enhancments:	1	2019	4	2023
Algorithm Acceptance Decision:	2	2019	2	2019
Algorithm Integration Decision: Algorithm Integration Decision 1	2	2019	4	2019
Algorithm Integration Decision: Algorithm Integration Decision 2	3	2020	4	2020
Algorithm Integration Decision: Algorithm Integration Decision 3	3	2021	4	2021
System Integration: System Integration 7	1	2019	4	2021
System Integration: System Integration 8	2	2022	3	2022
System Integration: System Integration 9	2	2023	3	2023
Testing:	1	2019	4	2023
System Engineering:	1	2019	4	2023
Algorithm Fielding Decision: Algorithm Fielding Decision 1	2	2019	3	2019
Algorithm Fielding Decision: Algorithm Fielding Decision 2	2	2020	3	2020
Algorithm Fielding Decision: Algorithm Fielding Decision 3	2	2021	3	2021
Algorithm Performance Analysis:	1	2019	4	2023