Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Navy											Date: March 2014	
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 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
Total Program Element	71.640	3.658	4.026	2.164	-	2.164	2.526	2.054	2.538	3.210	Continuing	Continuing
2345: *Fleet METOC Equipment*	52.597	2.380	2.611	1.224	-	1.224	1.332	0.848	1.310	1.950	Continuing	Continuing
2346: *METOC Sensor Engineering*	19.043	1.278	1.415	0.940	-	0.940	1.194	1.206	1.228	1.260	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

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 thrust area 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 is on the Meteorological and Oceanographic Future Mission Capabilities (METOC FMC) project.

B. Program Change Summary ($ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	4.060	4.026	4.393	-	4.393
Current President's Budget	3.658	4.026	2.164	-	2.164
Total Adjustments	-0.402	-	-2.229	-	-2.229
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.062	-			
• Program Adjustments	-	-	-0.170	-	-0.170
• Rate/Misc Adjustments	-0.001	-	-2.059	-	-2.059
• Congressional General Reductions Adjustments	-0.339	-	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Navy	Date: March 2014
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*

Change Summary Explanation

Technical: The Littoral Battlespace Sensing Unmanned Undersea Vehicles (LBS-UUV) program's primary focus has shifted from the Engineering and Manufacturing Development phase to the Production phase.

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy											Date: March 2014	
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 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
2345: *Fleet METOC Equipment*	52.597	2.380	2.611	1.224	-	1.224	1.332	0.848	1.310	1.950	Continuing	Continuing
Quantity of RDT&E Articles	0.000	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

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 and the Environmental Satellite Receiver Processor (ESRP) (comprised of AN/SMQ-11 (sea and shore configuration) and AN/FMQ-17 (shore configuration)) program.

FY 2015 request provides for the continued development of advanced software tools for METOC asset allocation, METOC decision support software applications and interfaces to tactical and strategic decision aids along with component and prototype efforts associated with acquiring environmental data, and the development of an end-to-end methodology to collect, fuse, and integrate these data into Navy and DoD networks and command and control nodes, and continue the development to support infrastructure for advanced global and regional prediction systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2013**	**FY 2014**	**FY 2015**
Title: Meteorological and Oceanographic (METOC) Future Mission Capabilities (FMC)	1.950	2.077	0.839
Articles:	-	-	-
FY 2013 Accomplishments: Continued advanced software tools development for Meteorological & Oceanography (METOC) asset allocation, METOC decision support software applications, and interfaces to tactical and strategic decision aids along with component and prototype efforts associated with acquiring environmental data. Continued development of an end-to-end methodology to collect, fuse, and			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
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 2013	FY 2014	FY 2015
integrate these data into Navy and DoD networks and command & control nodes. Continued development of support infrastructure for advanced global & regional Meteorological & Oceanography (METOC) prediction systems. ***FY 2014 Plans:*** Continue advanced software tools development for METOC asset allocation, METOC decision support software applications, and interfaces to tactical and strategic decision aids along with component and prototype efforts associated with acquiring environmental data. Continue development of an end-to-end methodology to collect, fuse, and integrate these data into Navy and DoD networks and command & control nodes. Continue development of support infrastructure for advanced global & regional METOC prediction systems. Develop Through-the-sensor (TTS) technologies and alternative sampling strategies for oceanographic characterization. ***FY 2015 Plans:*** Continue advanced METOC infrastructure development for METOC decision support software applications and interfaces to tactical and strategic decision aids along with component and prototype efforts associated with acquiring environmental data. Continue development of an end-to-end methodology to collect, fuse, and integrate these data into Navy and DoD networks and command & control nodes. Continue development of support infrastructure for advanced global & regional METOC prediction systems. Continue to develop, demonstrate and assess TTS technologies and alternative sampling strategies for environmental characterization.			
Title: Littoral Battlespace Sensors - Unmanned Undersea Vehicle (LBS-UUV) ***Articles:*** ***FY 2013 Accomplishments:*** Conducted Littoral Battlespace Sensors ocean Glider (LBS-G) and Littoral Battlespace Sensors Autonomous Undersea Vehicles (LBS-AUV) engineering design studies as required. Developed system upgrades via Engineering Change Proposals (ECPs), and corrected any identified software and/or hardware deficiencies as required. Focused areas include enhanced autonomy, Glider Operations Center (GOC) automation, communications improvements, battery redesign and others as required. These are all multi-year efforts. ***FY 2014 Plans:*** Conduct LBS-G and LBS-AUV engineering design studies as required. Develop system upgrades via ECPs, and correct any identified software and/or hardware deficiencies as required. Continue efforts on enhanced autonomy, GOC automation, communications improvements, battery redesign and others as appropriate. ***FY 2015 Plans:*** Conduct Littoral Battlespace Sensors ocean Glider (LBS-G) and Littoral Battlespace Sensors Autonomous Undersea Vehicles (LBS-AUV) engineering design studies as required. Develop system upgrades via Engineering Change Proposals (ECPs), and	0.168 -	0.232 -	0.145 -

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
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 2013	FY 2014	FY 2015
correct any identified software and/or hardware deficiencies as required. Complete communications enhancements. Continue efforts on enhanced autonomy, Glider Operations Center (GOC) automation, battery redesign and others as required.			
Title: Environmental Satellite Receiver Processor (ESRP)	0.262	0.302	0.240
Articles:	-	-	-
FY 2013 Accomplishments: Developed and tested annual hardware and software upgrades to integrate new METOC Satellite Sensors available in the Geostationary Operational Environmental Satellite (GOES) system and the Polar Orbiting Environmental Satellite (POES) system. Continued integration of ESRP systems in support of Joint Polar-orbiting Satellite System (JPSS). Overall program efforts included investigation of emerging technologies through study, development and associated testing for feasibility of program insertion.			
FY 2014 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 JPSS. Overall program efforts include investigation of emerging technologies through study, development and associated testing for feasibility of program insertion.			
FY 2015 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 JPSS, and European Meteorology Satellites (EUMETSAT). Overall program efforts include investigation of emerging technologies through study, development and associated testing for feasibility of program insertion.			
Accomplishments/Planned Programs Subtotals	2.380	2.611	1.224

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• OPN/4226: *Meteorological Equipment*	17.790	19.118	12.575	-	12.575	14.947	15.834	16.512	16.549	Continuing	Continuing
• RDTEN/0603207N/2341: *METOC Data Acquisition*	5.793	6.336	2.518	-	2.518	4.387	4.430	5.084	5.230	Continuing	Continuing
• RDTEN/0603207N/2342: *METOC Data Assimilation and MOD*	10.242	10.250	4.937	-	4.937	8.154	8.352	8.709	9.669	Continuing	Continuing
• RDTEN/0604218N/2346: *METOC Sensor Engineering*	1.279	1.415	0.940	-	0.940	1.194	1.206	1.228	1.260	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost

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 Program Executive Officer for Command, Control, Communications, Computers and Intelligence.

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 have a cost, schedule, performance and transition risk analysis completed within the past 12 months.

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Navy		Date: March 2014
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2345 / *Fleet METOC Equipment*

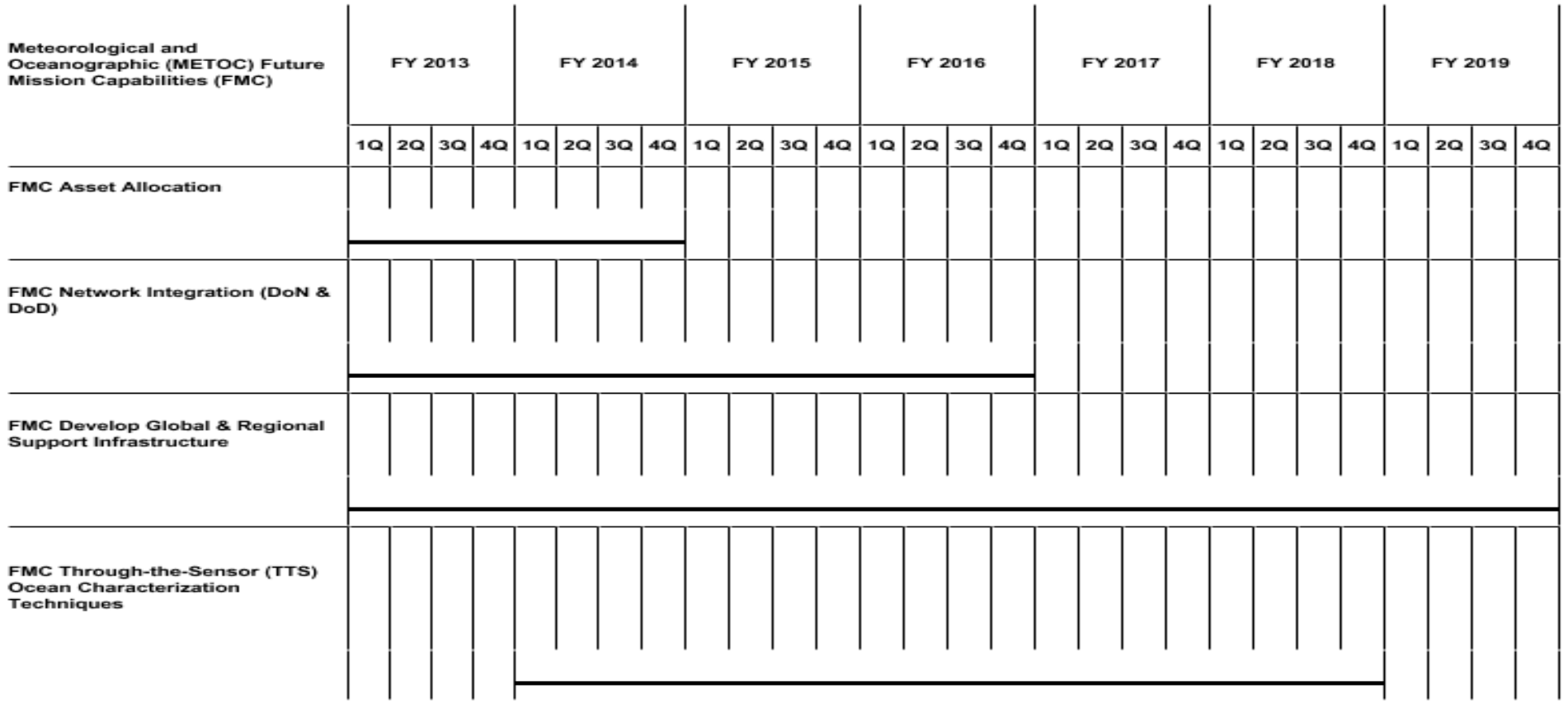

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy											Date: March 2014	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604218N / *Air/Ocean Equipment Engineering*				Project (Number/Name) 2346 / *METOC Sensor Engineering*			
COST ($ in Millions)	**Prior Years**	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
2346: *METOC Sensor Engineering*	19.043	1.278	1.415	0.940	-	0.940	1.194	1.206	1.228	1.260	Continuing	Continuing
Quantity of RDT&E Articles	0.000	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

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.

FY 2015 request provides for the continued development of advanced sensor system support hardware and software technologies for sensor deployment, data processing and performance metrics to optimize sensor performance and assess the viability of sensors and subsystems on unmanned and manned aircraft systems and autonomous undersea platforms for collection of automated METOC data and information.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Title: Meteorological and Oceanographic (METOC) Future Mission Capabilities (FMC)	1.278	1.415	0.940
Articles:	-	-	-

FY 2013 Accomplishments:

Continued system development and demonstration of METOC manned, unmanned and automated sensors (to include integration of environmental sensors into a larger environmental sensing strategy). Continued the development of advanced sensor system support technologies and techniques for sensor deployment, data processing and analysis to include performance metrics to optimize sensor performance. Assessed viability of sensors and subsystem sensors on unmanned and manned aircraft systems and autonomous undersea systems for collection of automated METOC data. Continued to develop infrastructure to acquire, process and distribute METOC data and products.

FY 2014 Plans:

Continue system development and demonstration of METOC manned, unmanned and automated sensors (to include integration of environmental sensors into a larger environmental sensing strategy). Continue the development of advanced sensor system

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2346 / *METOC Sensor Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
support technologies and techniques for sensor deployment, data processing and analysis to include performance metrics to optimize sensor performance. Assess viability of sensors and subsystem sensors on unmanned and manned aircraft systems and autonomous undersea systems for collection of automated Meteorological and Oceanographic (METOC) data. Continue to develop infrastructure to acquire, process and distribute METOC data and products.			
FY 2015 Plans: Continue system development and demonstration of METOC manned, unmanned and automated sensors (to include integration of environmental sensors into a larger environmental sensing strategy). Continue the development of advanced sensor system support technologies and techniques for sensor deployment, data processing and analysis to include performance metrics to optimize sensor performance. Continue to develop infrastructure to acquire, process and distribute METOC data and products.			
Accomplishments/Planned Programs Subtotals	1.278	1.415	0.940

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• RDTEN/0603207N/2341: *METOC DATA ACQUISITION*	5.793	6.336	2.518	-	2.518	4.387	4.430	5.084	5.230	Continuing	Continuing
• RDTEN/0603207N/2342: *METOC DATA ASSIMILATION AND MOD*	10.242	10.250	4.937	-	4.937	8.154	8.352	8.709	9.669	Continuing	Continuing
• RDTEN/0604218N/2345: *FLEET METOC EQUIPMENT*	2.380	2.611	1.224	-	1.224	1.332	0.848	1.310	1.950	Continuing	Continuing

Remarks

D. Acquisition Strategy

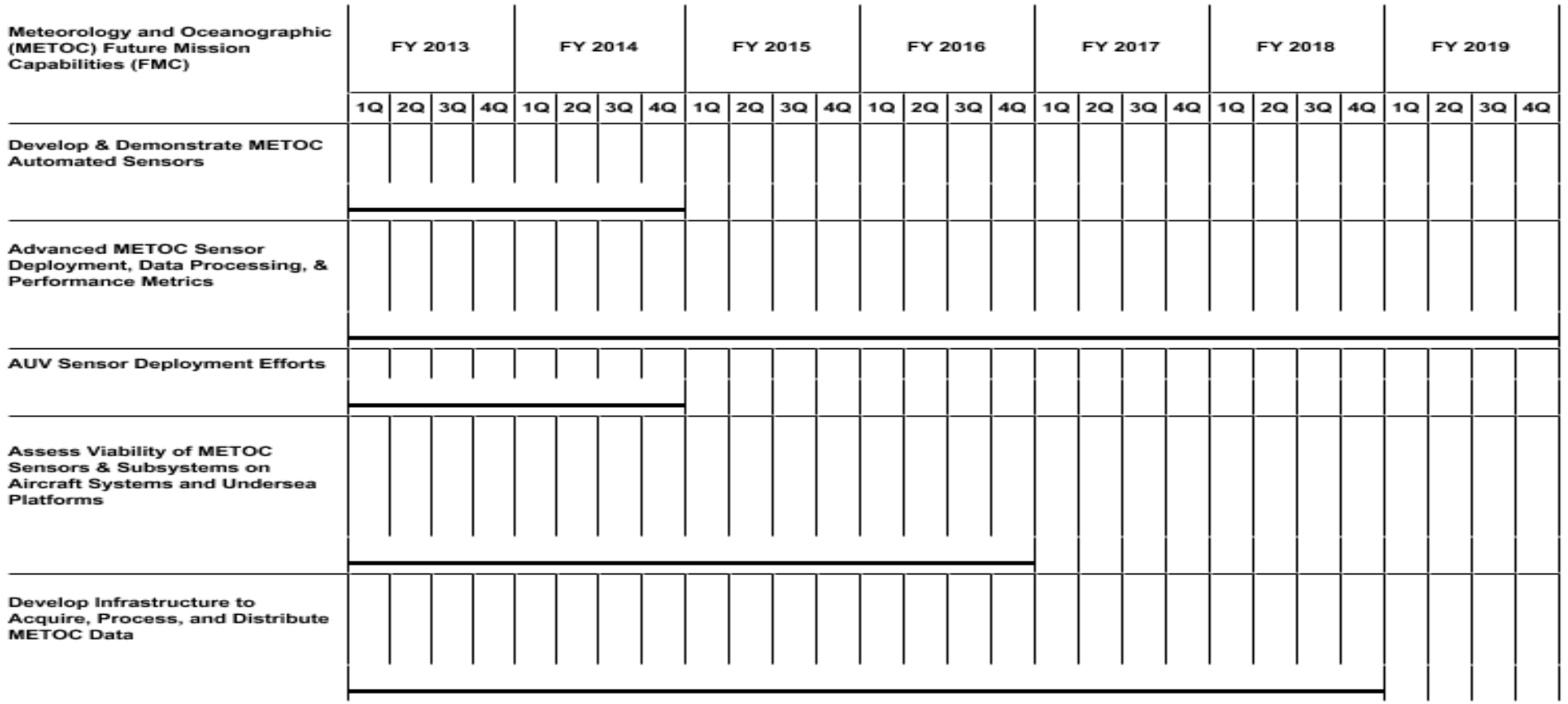
Acquisition and contracting strategies are to support engineering and manufacturing development of specialized, high resolution instrumentation systems and measurement techniques for obtaining near real-time in-situ Meteorological and Oceanographic (METOC) data in denied or remote areas by providing 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-4, RDT&E Schedule Profile: PB 2015 Navy		Date: March 2014
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604218N / *Air/Ocean Equipment Engineering*	**Project (Number/Name)** 2346 / *METOC Sensor Engineering*



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