Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy												Date: March 2024
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604501N *I Advanced Above Water Sensors*							
COST ($ in Millions)	**Prior Years**	**FY 2023**	**FY 2024**	**FY 2025 Base**	**FY 2025 OCO**	**FY 2025 Total**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**Cost To Complete**	**Total Cost**
Total Program Element	336.704	70.551	115.396	112.231	-	112.231	72.689	61.790	27.468	27.996	Continuing	Continuing
3232: *Multi-Mission Signal Processor*	173.464	2.609	2.577	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	178.650
3243: *Shipboard Passive Electro-Optical Infrared Development*	89.626	59.758	103.084	95.251	-	95.251	57.414	47.018	12.537	12.777	Continuing	Continuing
3301: *Improved Capabilities SPY-1 Radar*	73.614	8.184	9.735	16.980	-	16.980	15.275	14.772	14.931	15.219	Continuing	Continuing

A. Mission Description and Budget Item Justification

Multi-Mission Signal Processor (MMSP): The development of MMSP provides simultaneous Anti-Air Warfare (AAW)/Ballistic Missile Defense (BMD) multi-mission capability for DDG 51 class ships as part of the Aegis Modernization Program. This capability is utilized for DDG 113 and follow new construction and Aegis Ashore. Modifies SPY-1D transmitters to enable dual beam for reduced frame times and better reaction time, provides stability for all D(V) waveforms, and avoids operational degradation. The SPY-1 radar system detects, tracks, and supports engagements of a broader range of threats. MMSP improves performance in littoral, ducted clutter, electronic attack (EA), and chaff environments and provides greater commonality in computer programs and equipment. This effort also provides for the development of MMSP on Destroyers Commercial Off The Shelf (COTS) refresh and MMSP technology refresh. MMSP/AEGIS Linear Processing System (ALPS) integration provides adjunct processing for data collection. Starting in FY25, funding has been realigned within PE 0604501N from PU 3232 to 3301 to gain contractual efficiencies and program flexibility.

Shipboard Passive Electro-Optical Infrared (SPEIR) Block I will be an open architecture system that addresses near-term capability requirements and associated gaps identified in the 2019 SPEIR Capability Development Document (CDD). This program answers an urgent counter unmanned aircraft system operational need for the Fleet to provide an initial capability by FY26. The SPEIR acquisition leverages technology developed under the Office of Naval Research's (ONR's) Combined: Electro-Optical/Infrared (EO/IR) Surveillance and Response System (CESARS) Science and Technology (S&T) effort, specifically related to the Shipboard Panoramic EO/IR Cueing and Surveillance System (SPECSS). SPEIR Block I will provide a common 360-degree EO/IR Electronic Support (ES) capability to surface ships that will passively find, fix, track, and target current / emerging threats in support of the following warfare missions: Anti-Ship Cruise Missile (ASCM) Defense, Counter-Unmanned Aircraft Systems (UAS), Counter-Fast Attack Craft / Fast In-shore Attack Craft (FAC/FIAC), and Mobility. SPEIR Block I will consist of a passive Wide Field of View (WFOV) capability with a 360-degree field-of-view optical sensors for autonomous detection and tracking for 24/7 day/night shipboard situational awareness. SPEIR Block I will also include an enhanced, high resolution Narrow-Medium Field of View (NFOV) and laser range-finding capability that will provide 3D target tracking, identification, and threat assessment. SPEIR Block I will have limited integration with shipboard combat systems to exchange target track data and disseminate motion imagery. This program includes risk reduction initiatives for modeling and simulation, sensor protection counter-countermeasures, Sensor Fusion Algorithms and combat system track publishing to enable limited Combat System Integration (CSI). SPEIR Block II will be a future program that will build on the modular open system architecture of Block I to address longer-term capability requirements to include an expanded spatial coverage envelope, Periscope Detection and Discrimination

(PDD) and Mine Like Object (MLO) avoidance. SPEIR Block II will also provide full combat system integration and will include a government software development and integration effort for Soft-Kill Coordination System (SKCS) to manage ES engagements. The FY25 budget request supports completion of core software builds and associated integration effort, and assembly of two full Engineering Development Models (EDMs), and program testing. Scope also includes execution of Milestone C (MS C), training curriculum development, execution of Environmental Qualification Testing (EQT) and Formal Qualification Testing (FQT), Operational Assessment (OA), and Modeling and Simulation (M&S) development and maturation. FY24 to FY25 funding decreases due to expected ramp down of developmental activities. Efforts will also include development of capability to integrate SPEIR with the AEGIS Combat System and planning for Land Based Testing (LBT). RDT&E costs are anticipated to ramp down increasingly in FY26 as a result of completion of Integration & Development Test planning, the majority of core software development, EDM material procurements, and all three (3) EDMs are assembled and integrated to support the execution of developmental test events prior to program transition to the Production phase.

Improved Capabilities for SPY-1 Radar: These Reliability, Maintainability, and Availability (RM&A) improvements and solid state technology insertions are intended to reduce cascading failures, mitigate obsolescence issues, and improve reliability in support of Anti-Air Warfare (AAW) and Ballistic Missile Defense (BMD) missions while still providing AN/ SPY-1 Radar Total Ownership Cost Reductions. Improvements, such as Solid State Insertion to address Diminishing Manufacturing Sources and Material Shortages (DMSMS), will yield reductions in annual fleet maintenance costs and is a top fleet requirement as part of the AEGIS Wholeness initiative. In addition to RM&A improvements, warfighting improvements funded in this line includes the following: Transmitter Noise Cancellation (TNC) development includes hardware/software to counter low radar cross section, low altitude threats. Side Lobe Blanking (SLB) addresses shortfalls in mixed electronic attack environment while in an Integrated Air and Missile Defense (IAMD) mode. The Ship-Based Non-Cooperative Target Recognition (SBNCTR) program Phase 2A will develop algorithms to provide classification for targets. Advanced Calibration Experiment (ACE) Phase 2 is being incorporated into Baseline 9. Elevated Radar Advanced Calibration Experiment (ERACE) Phases 1/2 and 3 will incorporate into Baseline 9. Electronic Attack (EA) and Rapid Radar Capability Improvement Program (R2CIP) develop solutions for evolving EA threats. The development of MMSP provides simultaneous Anti-Air Warfare (AAW)/Ballistic Missile Defense (BMD) multi-mission capability for DDG 51 class ships as part of the Aegis Modernization Program. This capability is utilized for DDG 113 and follow new construction and Aegis Ashore. Modifies SPY-1D transmitters to enable dual beam for reduced frame times and better reaction times, provides stability for all D(V) waveforms, and avoids operational degradation. The SPY-1 radar system detects, tracks, and supports engagements of a broader range of threats. MMSP improves performance in littoral, ducted clutter, electronic attack (EA), and chaff environments and provides greater commonality in computer programs and equipment. This effort also provides for the development of MMSP-Restoration (MMSP-R) to support system security requirements on Destroyers Commercial Off The Shelf (COTS) refresh and MMSP/MMSP-R technology refresh. Starting in FY25, funding from MMSP PU 3232 has been realigned into SPY-1 PU 3301 to gain contractual efficiencies and program flexibility. The FY25 budget request continues the development efforts of SBNCTR Phase 2A, TNC Phase 1/2 and EA improvements, completes SLB Technology Development and ERACE Phase 1/2, and commences ACE Phase 2 and SLB Integration and Test (I&T). In addition, the FY25 budget request continues efforts realigned from PU 3232, AEGIS Capability Build (ACB) 16 Radar Requirements and Analysis and MMSP Technology Refresh/Diminishing Manufacturing Sources and Material Shortages (DMSMS) Solutions, continues ACB 16 COTS Refresh, MMSP/MMSP-R technology refresh to support Aegis Modernization, and MMSP Engineering Change Proposals (ECP) and software updates, and commences DMSMS Tech Solutions. MMSP-R includes software updates required on new computer platforms. Engineering efforts will be required to assess alternate technologies and determine optimal MMSP architectural solutions, which will include system security requirements.

AN/SPS-49 Technology Refresh: FY22 was the last year of funding for this program. AN/SPS-49 is the only Air Surveillance Radar on the LSD 41/49 class ships. Continued degradation and increasingly low radar availability of the AN/SPS-49 Radar is greatly impacting deployed missions, impacting safety of flight and affecting

Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy	Date: March 2024
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604501N *I Advanced Above Water Sensors*

LSD Air Warfare capability and operations and as a result, AN/SPS-49 Technology Refresh is required. This AN/,SPS-49 Technology Refresh will include Reliability, Maintainability, and Availability (RM&A) improvements and solid state technology insertions which will reduce cascading failures and mitigate obsolescence issues. In addition, this effort replaces key components to include: transmitter, receiver, exciter, antenna elevation servo control, radar system control, display and signal data processor (SDP). A digital receiver/exciter (DREX) with high-performance computing technology will be a key component in the new system. The current SPS-49 radar has no software so new software is being developed to mimic the current radar functions to maintain compatibility with internal and external interfaces. This effort will improve SPS-49 electronic protection, have increased surveillance range and increased slow moving small target detection, as well as reduce total ownership cost with lower unit cost and smaller size/weight/power requirements. Funding is also to complete development, test and evaluation, validation and integration of a technology refresh of the below deck hardware for the AN/ SPS-49A(V)1 Long Range Air Surveillance Radar.

B. Program Change Summary ($ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	72.772	115.396	113.651	-	113.651
Current President's Budget	70.551	115.396	112.231	-	112.231
Total Adjustments	-2.221	0.000	-1.420	-	-1.420
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.221	0.000			
• Program Adjustments	0.000	0.000	-2.199	-	-2.199
• Rate/Misc Adjustments	0.000	0.000	0.779	-	0.779

Change Summary Explanation

- FY23 funding decrease ($2.221M) is due to SBIR reductions.
- FY25 funding decrease ($1.420M) is due to Rate/Misc Adjustments ($0.779M) and Programmatic Changes (-$2.199M).

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy			Date: March 2024
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604501N / *Advanced Above Water Sensors*	Project (Number/Name) 3232 / *Multi-Mission Signal Processor*	

COST ($ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
3232: *Multi-Mission Signal Processor*	173.464	2.609	2.577	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	178.650
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Multi-Mission Signal Processor (MMSP): The development of MMSP provides simultaneous Anti-Air Warfare (AAW)/Ballistic Missile Defense (BMD) multi-mission capability for DDG 51 class ships as part of the Aegis Modernization Program. This capability is utilized for DDG 113 and follow new construction and Aegis Ashore. Modifies SPY-1D transmitters to enable dual beam for reduced frame times and better reaction time, provides stability for all D(V) waveforms, and avoids operational degradation. The SPY-1 radar system detects, tracks, and supports engagements of a broader range of threats. MMSP improves performance in littoral, ducted clutter, electronic attack (EA), and chaff environments and provides greater commonality in computer programs and equipment. This effort also provides for the development of MMSP on Destroyers Commercial Off The Shelf (COTS) refresh and MMSP/MMSP-R technology refresh. MMSP/AEGIS Linear Processing System (ALPS) integration provides adjunct processing for data collection.

Starting in FY25, funding has been realigned within PE 0604501N from PU 3232 to 3301 to gain contractual efficiencies and program flexibility.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Title: SYSTEMS ENGINEERING	2.609	2.577	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2024 Plans: - Continue ACB16 Commercial Off The Shelf (COTS) Refresh ECPs and CP 22 Certification - Continue MMSP-R development to support AEGIS Modernization due to DMSMS and obsolescence issues - Continue to maintain alignment with the BMD Program and the associated BSP adjunct to incorporate BMD capability within MMSP during AEGIS Modernization - Continue to support ACB16 MMSP improvements - Continue MMSP-R ECP/software updates - Complete MMSP-R/ALPS technology development					
FY 2025 Base Plans: N/A					
FY 2025 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3232 / *Multi-Mission Signal Processor*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
N/A ***FY 2024 to FY 2025 Increase/Decrease Statement:*** Starting in FY25, funding has been realigned within PE 0604501N from PU 3232 to PU 3301 to gain contractual efficiencies and program flexibility.					
Accomplishments/Planned Programs Subtotals	2.609	2.577	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
• OPN/0900: *BLI 0900/ OPN DDG Modernization*	741.354	628.532	861.066	-	861.066	860.988	930.378	946.139	965.049	11,632.088	22,260.273

Remarks

Since MMSP funding has been realigned to SPY-1, only FY23 and FY24 DDG Modernization controls are reflected under PU 3232. FY25 through FY29 controls are reflected under PU 3301.

D. Acquisition Strategy

Multi-Mission Signal Processor (MMSP) provides simultaneous AAW/BMD Multi-mission capability for AEGIS Modernization Program and leverages BMD 4.0.1 and SPY-1D (V) designs. Lockheed Martin (Moorestown, New Jersey) is awarded a sole source, cost-plus-fixed-fee, level-of-effort job order under a Basic Ordering Agreement (BOA) via Naval Surface Warfare Center (NSWC) Crane in support of the AEGIS weapons system, AN/SPY-1 radar. Efforts include engineering services and incidental supplies for radar readiness enhancements and improvements. Work will be performed in Moorestown, New Jersey. MMSP development efforts support integration of BMD 5.0 signal processing, and will lead to the Other Procurement, Navy (OPN)/Ship Construction, Navy (SCN) procurement for shore sites and shipsets. MMSP technology refresh will be incorporated into Baseline 9 and follow. MMSP/ALPS integration provides adjunct processing for data collection.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3232 / *Multi-Mission Signal Processor*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SYSTEM ENGINEERING	SS/CPFF	Lockheed Martin : Moorestown, NJ	118.149	0.000		0.000		0.000		-		0.000	0.000	118.149	-
SYSTEM ENGINEERING	C/CPFF	AEGIS Techrep : Moorestown, NJ	5.941	0.088	Mar 2023	0.116	Feb 2024	0.000		-		0.000	0.000	6.145	-
SYSTEM ENGINEERING	SS/FP	APL/JHU : Laurel, MD	5.161	0.000		0.000		0.000		-		0.000	0.000	5.161	-
SYSTEM ENGINEERING	WR	SCSTC : Dahlgren, VA	1.879	0.080	Oct 2022	0.074	Oct 2023	0.000		-		0.000	0.000	2.033	-
SYSTEM ENGINEERING	WR	NRL : Washington, DC	3.599	0.209	Nov 2022	0.148	Nov 2023	0.000		-		0.000	0.000	3.956	-
SYSTEM ENGINEERING	MIPR	MIT/LL : Lexington, MA	1.453	0.000		0.000		0.000		-		0.000	0.000	1.453	-
SYSTEM ENGINEERING	WR	NSWC/DD : Dahlgren, VA	11.350	0.333	Oct 2022	0.399	Oct 2023	0.000		-		0.000	0.000	12.082	-
SYSTEM ENGINEERING	WR	SCSC : Wallops Island, VA	0.019	0.000		0.000		0.000		-		0.000	0.000	0.019	-
SYSTEM ENGINEERING	WR	NSWC/CR : Crane, IN	9.381	1.128	Nov 2022	0.995	Oct 2023	0.000		-		0.000	0.000	11.504	-
SYSTEM ENGINEERING	WR	NSWC/PHD : Port Hueneme, CA	5.430	0.411	Nov 2022	0.485	Oct 2023	0.000		-		0.000	0.000	6.326	-
SYSTEM ENGINEERING	WR	Office of Naval Research : Arlington, VA	5.779	0.000		0.000		0.000		-		0.000	0.000	5.779	-
		Subtotal	168.141	2.249		2.217		0.000		-		0.000	0.000	172.607	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Allot	PEOIWS2 : Washington, DC	0.266	0.010	Mar 2023	0.010	Jan 2024	0.000		-		0.000	0.000	0.286	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3232 / *Multi-Mission Signal Processor*

Management Services ($ in Millions)

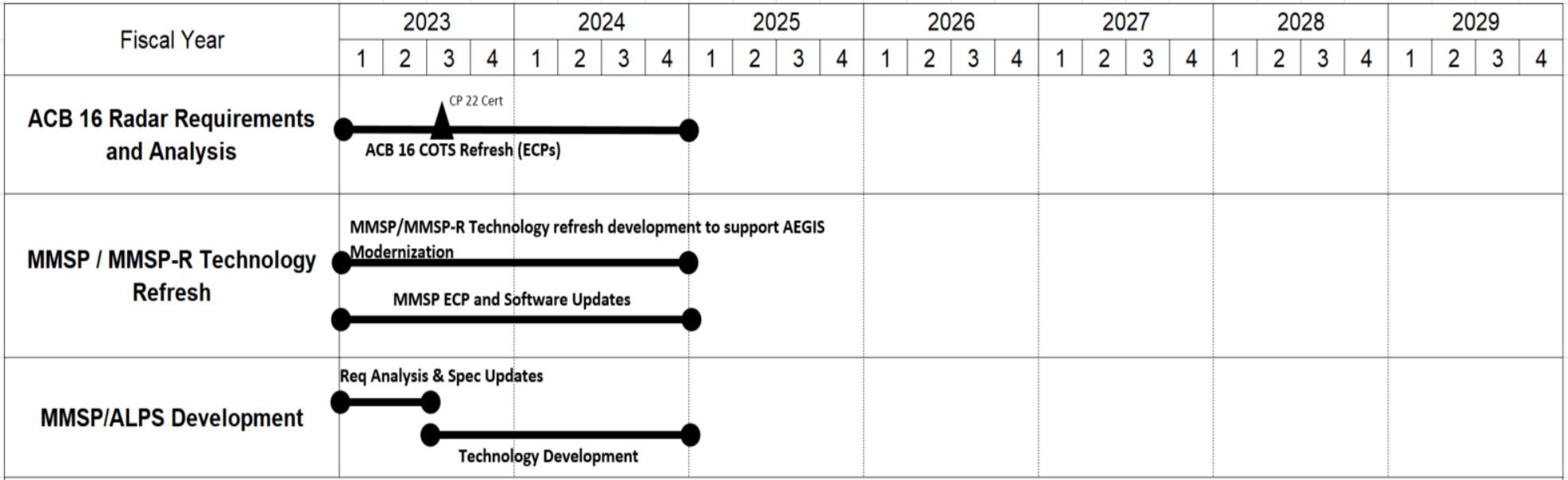
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Management Services	C/CPIF	SPA : Washington, DC	1.127	0.350	Dec 2022	0.350	Dec 2023	0.000		-		0.000	0.000	1.827	-
Support Management Services	SS/CPIF	SPA (PSS Bridge) : Washington, DC	1.403	0.000		0.000		0.000		-		0.000	0.000	1.403	-
Support Management Services	SS/CPIF	SPA (ESS Bridge) : Washington, DC	0.128	0.000		0.000		0.000		-		0.000	0.000	0.128	-
Support Management Services	C/CPIF	SPA (SEAPORT) : Washington, DC	2.247	0.000		0.000		0.000		-		0.000	0.000	2.247	-
Support Management Services	C/CPFF	CACI : Washington, DC	0.094	0.000		0.000		0.000		-		0.000	0.000	0.094	-
Support Management Services	C/CPFF	TMB : Washington, DC	0.031	0.000		0.000		0.000		-		0.000	0.000	0.031	-
Support Management Services	C/CPFF	Strategic Insight : Washington, DC	0.027	0.000		0.000		0.000		-		0.000	0.000	0.027	-
		Subtotal	5.323	0.360		0.360		0.000		-		0.000	0.000	6.043	N/A

	Prior Years	FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	173.464	2.609		2.577		0.000		-		0.000	0.000	178.650	N/A

Remarks

Starting in FY25, funding has been realigned within PE 0604501N from PU 3232 to PU 3301 to gain contractual efficiencies and program flexibility.

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3232 / *Multi-Mission Signal Processor*



Since the FY24 budget request, starting in FY25, MMSP PU 3232 has been realigned to SPY-1 PU 3301. As a result, ACB 16 COTS Refresh and MMSP/MMSP-R Technology Refresh will move to PU 3301 starting in FY25.
Since the FY24 budget request, it has been determined that the merge of ALPS into MMSP is not feasible. Therefore, requirement completes in FY24 and will not transition to PU 3301 in FY25.

Acronyms:

ACB: AEGIS Capability Build
ALPS: AEGIS Linear Processing System
COTS: Commericial Off The Shelf
CP: Capability Package
ECP: Engineering Change Proposal

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3232 / *Multi-Mission Signal Processor*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3232				
ACB16 COTS Refresh (ECPs)	1	2023	4	2024
MMSP/MMSP-R Technology Refresh to Support AEGIS Modernization	1	2023	4	2024
MMSP ECP and Software Updates	1	2023	4	2024
MMSP/ALPS Requirements Analysis and Specifications Update	1	2023	3	2023
CP-22 Certification Support	3	2023	3	2023
MMSP/ALPS Technology Development	3	2023	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy											Date: March 2024	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604501N / *Advanced Above Water Sensors*				Project (Number/Name) 3243 / *Shipboard Passive Electro-Optical Infrared Development*			
COST ($ in Millions)	**Prior Years**	**FY 2023**	**FY 2024**	**FY 2025 Base**	**FY 2025 OCO**	**FY 2025 Total**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**Cost To Complete**	**Total Cost**
3243: *Shipboard Passive Electro-Optical Infrared Development*	89.626	59.758	103.084	95.251	-	95.251	57.414	47.018	12.537	12.777	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Shipboard Passive Electro-Optical Infrared (SPEIR) Block I will be an open architecture system that addresses near-term capability requirements and associated gaps identified in the 2019 SPEIR Capability Development Document (CDD). This program answers an urgent counter unmanned aircraft system operational need for the Fleet to provide an initial capability by FY26. The SPEIR acquisition leverages technology developed under the Office of Naval Research's (ONR's) Combined EO/IR Surveillance and Response System (CESARS) Science and Technology (S&T) effort, specifically related to the Shipboard Panoramic EO/IR Cueing and Surveillance System (SPECSS).

SPEIR Block I will provide a common 360-degree EO/IR Electronic Support (ES) capability to surface ships that will passively find, fix, track, and target current / emerging threats in support of the following warfare missions: Anti-Ship Cruise Missile (ASCM) Defense, Counter-Unmanned Aircraft Systems (UAS), Counter-Fast Attack Craft / Fast In-shore Attack Craft (FAC/FIAC), and Mobility.

SPEIR Block I will consist of a passive Wide Field of View (WFOV) capability with a 360-degree field-of-view optical sensors for autonomous detection and tracking for 24/7 day/night shipboard situational awareness. SPEIR Block I will also include an enhanced, high resolution Narrow-Medium Field of View (NFOV) and laser range-finding capability that will provide 3D target tracking, identification, and threat assessment. SPEIR Block I will have limited integration with shipboard combat systems to exchange target track data and disseminate motion imagery.

This program includes risk reduction initiatives for modeling and simulation, sensor protection counter-countermeasures, Sensor Fusion Algorithms and combat system track publishing to enable limited Combat System Integration (CSI). SPEIR Block II will be a future program that will build on the modular open system architecture of Block I to address longer-term capability requirements to include an expanded spatial coverage envelope, Periscope Detection and Discrimination (PDD) and Mine Like Object (MLO) avoidance. SPEIR Block II will also provide full combat system integration and will include a government software development and integration effort for Soft-Kill Coordination System (SKCS) to manage ES engagements.

The FY25 budget request supports completion of core software builds and associated integration effort, and assembly of two full Engineering Development Models (EDMs), and program testing. Scope also includes execution of Milestone C (MS C), training curriculum development, execution of Environmental Qualification Testing (EQT) and Formal Qualification Testing (FQT), Operational Assessment (OA), and Modeling and Simulation (M&S) development and maturation. FY24 to FY25 funding decreases due to expected ramp down of developmental activities. Efforts will also include development of capability to integrate SPEIR with the AEGIS Combat System and planning for Land Based Testing (LBT). RDT&E costs are anticipated to ramp down increasingly in FY26 as a result of completion of Integration & Development

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3243 / *Shipboard Passive Electro-Optical Infrared Development*

Test planning, the majority of core software development, EDM material procurements, and all three (3) EDMs are assembled and integrated to support the execution of developmental test events prior to program transition to the Production phase.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Title: SPEIR Block I Systems Engineering	15.147	15.449	19.057	0.000	19.057
Articles:	-	-	-	-	-
FY 2024 Plans: - Continue to support and oversee Engineering Development Model (EDM) hardware and software development and integration - Continue review and assessment of contract deliverables - Continue systems engineering activities for detailed design - Prepare and conduct Critical Design Review (CDR) - Continue test program Modeling and Simulation (M&S) development and maturation - Continue integrated topside design activities for large deck ship classes - Support integration activities to ensure compatibility with Combat System - Perform test planning for Formal Qualification Testing (FQT)					
FY 2025 Base Plans: - Continue to support and oversee Engineering Development Model (EDM) hardware and software development and integration - Continue review and assessment of contract deliverables - Conduct and execute Milestone C (MS C) events and associated acquisition documentation - Continue test program Modeling and Simulation (M&S) development and maturation - Continue integrated topside design activities for large deck ship classes - Provide engineering oversight of development for combat system integration - Perform Environmental Qualification Testing (EQT) - Perform Formal Qualification Testing (FQT) - Preparation and execution of Operational Assessment (OA) - Preparation for Land Based Testing (LBT)					
FY 2025 OCO Plans: N/A					
FY 2024 to FY 2025 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3243 / *Shipboard Passive Electro-Optical Infrared Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Increase in FY25 aligns with planned development and is required to support the ramp up of Developmental Test and Evaluation and Milestone C planning and execution.					
Title: SPEIR Block I Development	44.611	87.635	76.194	0.000	76.194
Articles:	-	-	-	-	-
FY 2024 Plans: - Continue Engineering & Manufacturing Development (E&MD) design activities - Continue development of end item software builds - Complete Release 2 and Release 3 software builds - Prepare for and conduct Critical Design Review (CDR) - Purchase all remaining material for three (3) EDM builds - Perform test planning for FQT and Operational Assessment (OA) - Execute engineering testing at component and subsystem level - Commence integration of EDM units - Commence integrated topside design activities for large deck ship classes - Commence Combat System Integration engineering efforts					
FY 2025 Base Plans: - Continue to support and oversee Engineering Development Model (EDM) activities - Perform EMD Hardware & Software Integration - Complete final core capability software build - Prepare for and conduct Production Readiness Reviews (PRR) and System Verification Reviews (SVR) - Deliver EDM units to support program test events - Perform Environmental Qualification Test (EQT), Formal Qualification Testing (FQT) and Operational Assessment (OA) - Conduct Technology Readiness Assessment (TRA) - Conduct Environmental Stress Screening (ESS) - Execute development for Combat System Integration (CSI) - Incremental Design, Development, and Integration with Aegis Combat System - Planning Site Activation efforts required to Support Land Based Testing - Support for SPEIR Blk I Combat System Integration In-Progress Review					
FY 2025 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3243 / *Shipboard Passive Electro-Optical Infrared Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
N/A ***FY 2024 to FY 2025 Increase/Decrease Statement:*** Decrease from FY24 to FY25 aligns with the scope decrease to L3 Harris attributed to the completion of EDM material purchases and ramp down of core capability software development.					
Accomplishments/Planned Programs Subtotals	59.758	103.084	95.251	0.000	95.251

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
• OPN/2981: *SPEIR BLOCK 1*	0.000	255.256	228.910	-	228.910	238.621	213.983	216.265	221.280	12,455.089	13,829.404

Remarks

D. Acquisition Strategy

SPEIR will develop initial capability and required upgrades based on integrating technology advances and adding functional capabilities in an evolutionary fashion. Each Block acquisition program will be developed and contracted in an individual yet coordinated and overlapping fashion. Specifically, SPEIR involves the work performed under the CESARS program sponsored by ONR and transitioning the passive EO/IR component (SPECSS) which focuses on designing/architecting an advanced, integrated, EO/IR WFOV surveillance capability system for Naval Surface Platforms. The SPEIR program awarded a cost-plus fixed fee contract for Engineering and Manufacturing Development (E&MD) in April 2022. This contract includes fixed price incentive fee options for future procurement of Low Rate Initial Production (LRIP) units following Milestone C planned for FY25. The initial E&MD contract includes the procurement of a production-level Technical Data Package (TDP) to support full and open competition for future procurement of additional LRIP and Full Rate Production (FRP) units.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3243 / *Shipboard Passive Electro-Optical Infrared Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SPEIR Block 1 Development	C/CPIF	L3 Harris : Mason, OH	45.734	44.611	Nov 2022	77.429	Oct 2023	53.294	Oct 2024	-		53.294	Continuing	Continuing	Continuing
SPEIR Block 1 Combat System Integration	C/CPIF	Lockheed Martin : Moorestown, NJ	0.000	0.000		10.206	Oct 2023	22.900	Oct 2024	-		22.900	Continuing	Continuing	Continuing
		Subtotal	45.734	44.611		87.635		76.194		-		76.194	Continuing	Continuing	N/A

Remarks

1) Decrease in SPEIR Blk I Development from FY24 to FY25 aligns with anticipated ramp down to EM&D contract scope attributed to the completion of EDM material purchases and ramp down of core capability software development.
2) Increase in SPEIR Blk I Combat System Integration from FY24 to FY25 aligns with anticipated ramp up in integration activities to support program schedule.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SPEIR Block I Integrated Logistics Support	WR	NSWC Crane : Crane, IN	1.827	0.765	Oct 2022	0.780	Nov 2023	0.780	Nov 2024	-		0.780	Continuing	Continuing	Continuing
SPEIR Block I Integrated Logistics Support	WR	NAVSUP (ILA) : Mechanicburg, PA	0.007	0.000		0.000		0.000		-		0.000	0.000	0.007	-
SPEIR Block I Systems Engineering Support	WR	NSWC Crane : Crane, IN	5.112	2.508	Oct 2022	2.560	Nov 2023	3.756	Nov 2024	-		3.756	Continuing	Continuing	Continuing
SPEIR Block I Systems Engineering Support	WR	NSWC Dahlgren : Dahlgren, VA	1.474	0.612	Oct 2022	0.624	Nov 2023	1.384	Nov 2024	-		1.384	Continuing	Continuing	Continuing
SPEIR Block I Systems Engineering Support	WR	NRL : Washington, DC	2.554	1.255	Mar 2023	1.280	Nov 2023	1.280	Nov 2024	-		1.280	Continuing	Continuing	Continuing
SPEIR Block I Systems Engineering Support	SS/CPFF	APL : Laurel, MD	3.513	1.815	Nov 2022	1.851	Nov 2023	2.891	Nov 2024	-		2.891	Continuing	Continuing	Continuing
SPEIR Block I Systems Engineering Support	MIPR	MIT-LL : Cambridge, MA	1.420	0.612	Nov 2022	0.624	Nov 2023	0.624	Nov 2024	-		0.624	Continuing	Continuing	Continuing
SPEIR Block I Systems Engineering Support	SS/CPFF	DLA : Washington, DC	6.865	0.000		0.000		0.000		-		0.000	0.000	6.865	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3243 / *Shipboard Passive Electro-Optical Infrared Development*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SPEIR Block I Systems Engineering Support	SS/CPFF	DTIC : Fort Belvoir, VA	2.501	0.000		0.000		0.000		-		0.000	0.000	2.501	-
SPEIR Block I Systems Engineering Support	SS/CPFF	PEO STRI : Orlando, FL	1.248	0.000		0.000		0.000		-		0.000	0.000	1.248	-
SPEIR Block I Platform Integration Studies	C/BA	BIW : Bath. ME	0.000	0.000		0.312	Nov 2023	0.312	Nov 2024	-		0.312	Continuing	Continuing	Continuing
SPEIR Sensor Fusion	MIPR	GTRI : Atlanta, GA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
SPEIR Sensor Fusion	WR	NSWC Dahlgren : Dahlgren, VA	0.718	0.235	Mar 2023	0.240	Nov 2023	0.000		-		0.000	0.000	1.193	-
SPEIR Sensor Fusion	SS/CPFF	APL : Laurel, MD	1.288	0.816	Mar 2023	0.520	Nov 2023	0.000		-		0.000	0.000	2.624	-
SPEIR Sensor Fusion	WR	NSWC Crane : Crane, IN	2.001	1.173	Mar 2023	1.196	Nov 2023	0.000		-		0.000	0.000	4.370	-
SPEIR Track Publishing	WR	NSWC Dahlgren : Dahlgren, VA	1.372	0.510	Oct 2022	0.520	Nov 2023	0.000		-		0.000	0.000	2.402	-
SPEIR Track Publishing	SS/CPFF	APL : Laurel, MD	0.838	0.510	Nov 2022	0.520	Nov 2023	0.000		-		0.000	0.000	1.868	-
		Subtotal	32.738	10.811		11.027		11.027		-		11.027	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	WR	NSWC Crane : Crane, IN	2.970	1.326	Nov 2022	1.353	Nov 2023	2.980	Nov 2024	-		2.980	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NRL : Washington, DC	3.386	0.918	Nov 2022	0.937	Nov 2023	1.600	Nov 2024	-		1.600	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	SS/CPFF	APL : Laurel, MD	1.670	0.612	Nov 2022	0.624	Nov 2023	1.710	Nov 2024	-		1.710	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	COMOPTEVFOR : Norfolk, VA	0.478	0.155	Aug 2023	0.158	Dec 2023	0.260	Aug 2025	-		0.260	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NAWCPM : Point Mugu, CA	0.000	0.000		0.000		0.130	Nov 2024	-		0.130	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy			Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3243 / *Shipboard Passive Electro-Optical Infrared Development*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	8.504	3.011		3.072		6.680		-		6.680	Continuing	Continuing	N/A

Remarks

1) The increase from FY24 to FY25 is primarily due to the EQT & FQT Events and preparation for Land Based Testing (LBT).

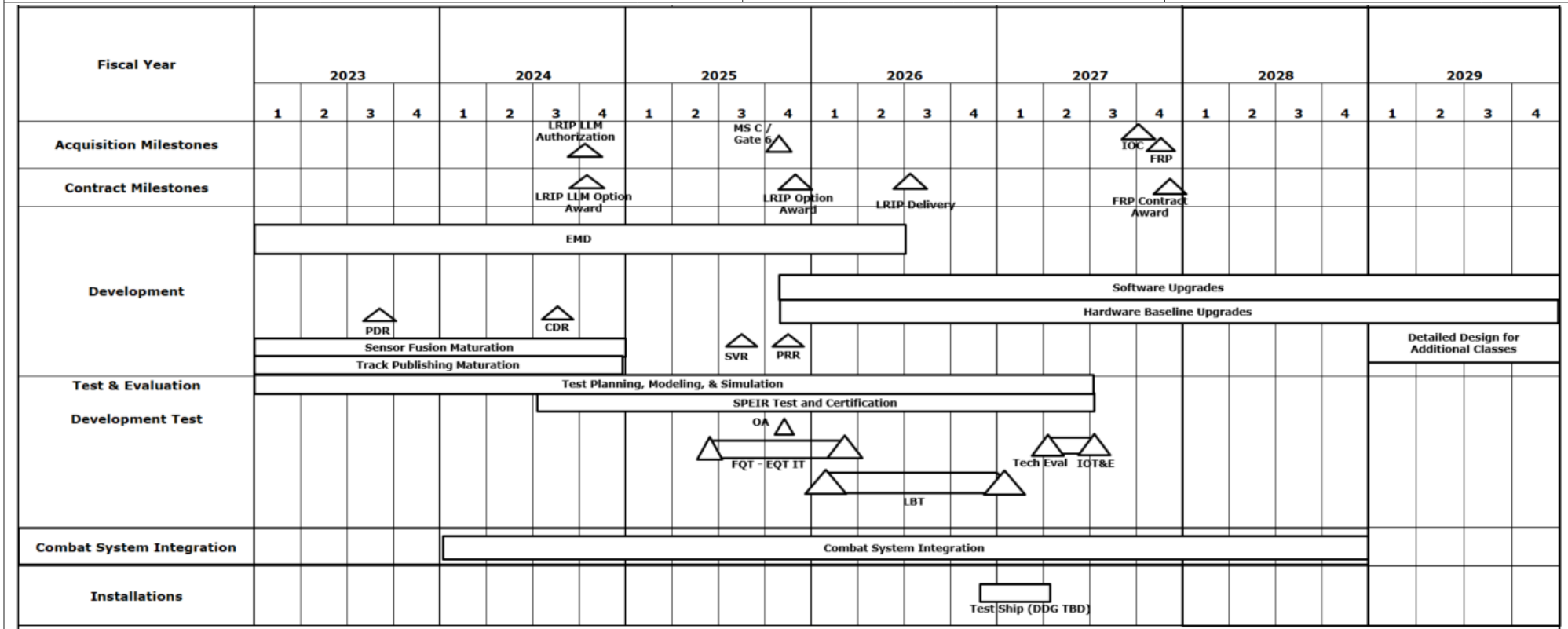
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SPEIR Block I Program Management	C/CPFF	SPA ESS (SEAPORT) : Washington, DC	1.280	0.510	Nov 2022	0.520	Nov 2023	0.520	Nov 2024	-		0.520	Continuing	Continuing	Continuing
SPEIR Block I Program Management	C/CPFF	TMB BFM (SEAPORT) : Washington, DC	0.825	0.510	Nov 2022	0.520	Nov 2023	0.520	Nov 2024	-		0.520	Continuing	Continuing	Continuing
SPEIR Block I Program Management	C/CPFF	BAH ILS (SEAPORT) : Washington, DC	0.445	0.255	Nov 2022	0.260	Nov 2023	0.260	Nov 2024	-		0.260	Continuing	Continuing	Continuing
SPEIR Block I Program Management	Sub Allot	NAVSEA Travel : Washington, DC	0.100	0.050	Oct 2022	0.050	Oct 2023	0.050	Oct 2024	-		0.050	Continuing	Continuing	Continuing
		Subtotal	2.650	1.325		1.350		1.350		-		1.350	Continuing	Continuing	N/A

	Prior Years	FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	89.626	59.758		103.084		95.251		-		95.251	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3243 / *Shipboard Passive Electro-Optical Infrared Development*



Acronyms: CDR - Critical Design Review; EMD - Engineering & Manufacturing Development; EQT - Environmental Qualification Testing; FQT - Formal Qualification Testing; FRP - Full Rate Production; IBR - Integrated Baseline Review; IT - Integrated Testing; IOC - Initial Operational Capability; IOT&E - Initial Operational Test & Evaluation; LBT - Land Based Testing; LLM - Long Lead Material; LRIP - Low Rate Initial Procurement; MS - Milestone; OA - Operational Assessment; PDR - Preliminary Design Review; PRR - Production Readiness Review; SFR - System Functional Review; SRR - System Requirements Review; SVR- System Verification Review

Changes from PB24 reflect more refined planning for FYDP out years for continued capability improvements and known variant development to support full SPEIR systme fielding plan and capabilty evolution roadmap. Additionally, updates were made to capture the conclusion of Sensor Fusion Maturation and Track Publishing Maturation at the end of FY24 as these efforts transition into baseline implementation for EMD.

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3243 / *Shipboard Passive Electro-Optical Infrared Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3243				
Engineering & Manufacturing Development (E&MD)	1	2023	2	2026
Sensor Fusion Maturation	1	2023	4	2024
Track Publishing Maturation	1	2023	4	2024
Test Planning, Modeling & Simulation	1	2023	3	2027
Preliminary Design Review (PDR)	3	2023	3	2023
Combat System Integration	1	2024	4	2028
Critical Design Review (CDR)	3	2024	3	2024
Test and Certification	3	2024	3	2027
LRIP Long Lead Material (LLM) Authorization	4	2024	4	2024
LRIP LLM Option Award	4	2024	4	2024
Formal Qualification Test (FQT) / Environmental Qualification Test (EQT) Integrated Testing (IT)	2	2025	1	2026
System Verification Review (SVR)	3	2025	3	2025
Milestone C	4	2025	4	2025
LRIP Option Award	4	2025	4	2025
Software Upgrades	4	2025	4	2029
Hardware Baseline Upgrades	4	2025	4	2029
Production Readiness Review (PRR)	4	2025	4	2025
Operational Assessment (OA)	4	2025	4	2025
Land Based Test (LBT)	1	2026	1	2027
LRIP Delivery	3	2026	3	2026

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3243 / *Shipboard Passive Electro-Optical Infrared Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test Ship Availability (DDG TBD)	4	2026	2	2027
Tech Eval/Initial Operational Test & Evaluation (IOT&E)	2	2027	3	2027
Initial Operational Capability (IOC)	4	2027	4	2027
Full Rate Production (FRP)	4	2027	4	2027
FRP Contract Award	4	2027	4	2027
Detailed Design for Additional Classes	1	2029	4	2029

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy			Date: March 2024
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604501N / *Advanced Above Water Sensors*	Project (Number/Name) 3301 / *Improved Capabilities SPY-1 Radar*	

COST ($ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
3301: *Improved Capabilities SPY-1 Radar*	73.614	8.184	9.735	16.980	-	16.980	15.275	14.772	14.931	15.219	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Improved Capabilities for SPY-1 Radar: These Reliability, Maintainability, and Availability (RM&A) improvements and solid state technology insertions are intended to reduce cascading failures, mitigate obsolescence issues, and improve reliability in support of Anti-Air Warfare (AAW) and Ballistic Missile Defense (BMD) missions while still providing AN/ SPY-1 Radar Total Ownership Cost Reductions. Improvements, such as Solid State Insertion to address Diminishing Manufacturing Sources and Material Shortages (DMSMS), will yield reductions in annual fleet maintenance costs and is a top fleet requirement as part of the AEGIS Wholeness initiative. In addition to RM&A improvements, warfighting improvements funded in this line includes the following: Transmitter Noise Cancellation (TNC) development includes hardware/software to counter low radar cross section, low altitude threats. Side Lobe Blanking (SLB) addresses shortfalls in mixed electronic attack environment while in an Integrated Air and Missile Defense (IAMD) mode. The Ship-Based Non-Cooperative Target Recognition (SBNCTR) program Phase 2A will develop algorithms to provide classification for targets. Advanced Calibration Experiment (ACE) Phase 2 is being incorporated into Baseline 9. Elevated Radar Advanced Calibration Experiment (ERACE) Phases 1/2 and 3 will incorporate into Baseline 9. Electronic Attack (EA) and Rapid Radar Capability Improvement Program (R2CIP) develop solutions for evolving EA threats. The development of MMSP provides simultaneous Anti-Air Warfare (AAW)/Ballistic Missile Defense (BMD) multi-mission capability for DDG 51 class ships as part of the Aegis Modernization Program. This capability is utilized for DDG 113 and follow new construction and Aegis Ashore. Modifies SPY-1D transmitters to enable dual beam for reduced frame times and better reaction times, provides stability for all D(V) waveforms, and avoids operational degradation. The SPY-1 radar system detects, tracks, and supports engagements of a broader range of threats. MMSP improves performance in littoral, ducted clutter, electronic attack (EA), and chaff environments and provides greater commonality in computer programs and equipment. This effort also provides for the development of MMSP-Restoration (MMSP-R) to support system security requirements on Destroyers Commercial Off The Shelf (COTS) refresh and MMSP/MMSP-R technology refresh.

Starting in FY25, funding from MMSP PU 3232 has been realigned into SPY-1 PU 3301 to gain contractual efficiencies and program flexibility. The FY25 budget request continues the development efforts of SBNCTR Phase 2A, TNC Phase 1/2 and EA improvements, completes SLB Technology Development and ERACE Phase 1/2, and commences ACE Phase 2 and SLB Integration and Test (I&T). In addition, the FY25 budget request continues efforts realigned from PU 3232, AEGIS Capability Build (ACB) 16 Radar Requirements and Analysis and MMSP Technology Refresh/Diminishing Manufacturing Sources and Material Shortages (DMSMS) Solutions, continues ACB 16 COTS Refresh, MMSP/MMSP-R technology refresh to support Aegis Modernization, and MMSP Engineering Change Proposals (ECP) and software updates, and commences DMSMS Tech Solutions. MMSP-R includes software updates required on new computer platforms. Engineering efforts will be required to assess alternate technologies and determine optimal MMSP architectural solutions, which will include system security requirements.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Title: Improved Capabilities SPY-1 Radar	8.184	9.735	16.980	0.000	16.980
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
FY 2024 Plans: - Continue SBNCTR Phase 2A development to include integration of other sensors, and complete In Process Review (IPR) #4 - Continue TNC Phase 1/2 development and complete IPR #1 - Continue SLB technology development - Continue EA improvements technology development, Integration and Test - Continue Radar Improvements Analysis - Complete Digital Receive Upgrade (DRU) requirements and specification analysis - Continue ERACE Phase 1/2 development and conduct FLEX event ***FY 2025 Base Plans:*** - Commence ACE Phase 2 development and complete requirements definition - Continue SBNCTR Phase 2A development to include integration of other sensors, and complete Integration and Test - Continue TNC Phase 1/2 development - Complete SLB technology development and commence Integration and Test - Continue EA improvements technology development - Continue Radar Improvements Analysis - Complete ERACE Phase 1/2 development and conduct CP 24 certification - Continue ACB16 Commercial Off The Shelf (COTS) Refresh ECPs - Continue MMSP-R development to support AEGIS Modernization due to DMSMS and obsolescence issues - Continue to maintain alignment with the BMD Program and the associated BSP adjunct to incorporate BMD capability within MMSP during AEGIS Modernization - Continue to support ACB16 MMSP improvements - Continue MMSP-R ECP/software updates - Commence DMSMS Tech Solutions ***FY 2025 OCO Plans:*** N/A ***FY 2024 to FY 2025 Increase/Decrease Statement:*** Increase in FY25 is a result of the realignment of funding within PE 0604501N from MMSP PU 3232 to SPY-1 PU 3301. Funding supports the start of ACE Phase 2 and DMSMS Tech Solutions, and continues ACB 16 COTS					

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Refresh ECPs, MMSP/MMSP-R Technology Refresh development, and MMSP ECP and software updates, and conducts ERACE Phase 1/2 CP-24 Certification.					
Accomplishments/Planned Programs Subtotals	8.184	9.735	16.980	0.000	16.980

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
• O&MN/1C1C/0702228N: *O&M,N AEGIS Wholeness SPY Transmitter Reliability*	4.376	4.533	4.531	-	4.531	5.474	5.586	5.671	5.785	Continuing	Continuing
• OPN/2980: *OPN SPY-1 RM&A IMPROVEMENTS*	83.745	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1,268.986
• OPN/2981: *OPN SPY-1 RM&A IMPROVEMENTS*	0.000	255.256	228.910	-	228.910	238.621	213.983	216.265	221.280	12,455.089	13,829.404
• OPN/0900: BLI 0900/: *OPN DDG Modernization*	741.354	624.520	861.066	-	861.066	860.988	930.378	946.139	965.049	11,640.057	17,569.551

Remarks

D. Acquisition Strategy

Improved Capabilities SPY-1 Reliability, Maintainability, and Availability (RM&A) will design and develop an Ordnance Alterations (ORDALT) Package for fixes and modifications to known transmitter, signal processor, microwave tube (MWT), and logistic shortcomings. Lockheed Martin Corporation (Moorestown, New Jersey) was awarded a sole source, cost- plus-fixed-fee, level-of-effort job order under a Basic Ordering Agreement (BOA) via Naval Surface Warfare Center (NSWC) Crane. The contract supports the development and fielding of AN/SPY-1 Radar capability upgrades and reliability improvements in support of AEGIS combat system. The current period of performance on the BOA is through April 2024 and will continue under a follow-on BOA. Investment in development of SPY-1 RM&A improvements to address failure mechanisms and improve reliability is planned to continue beyond the FYDP. Multi-Mission Signal Processor (MMSP) provides simultaneous AAW/BMD Multi-mission capability for AEGIS Modernization Program and leverages BMD 4.0.1 and SPY-1D (V) designs. Efforts include engineering services and incidental supplies for radar readiness enhancements and improvements. MMSP development efforts support integration of BMD 5.0 signal processing and will lead to the Other Procurement, Navy (OPN)/Ship Construction, Navy (SCN) procurement for shore sites and shipsets. Radar capability upgrades (SBNCTR, TNC, ACE, ERACE and SLB), reliability improvements, MMSP/MMSP-R technology refresh and DMSMS tech solutions will be incorporated into Baseline 9 and follow.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy			Date: March 2024
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604501N / *Advanced Above Water Sensors*	Project (Number/Name) 3301 / *Improved Capabilities SPY-1 Radar*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SYSTEM ENGINEERING	MIPR	Office of Naval Research : Arlington, VA	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	-
SYSTEM ENGINEERING	C/CPFF	Raytheon : Sudbury, MA	1.941	0.000		0.000		0.000		-		0.000	0.000	1.941	-
SYSTEM ENGINEERING	WR	NSWC/Crane, IN : Crane, IN	29.652	2.978	Oct 2022	4.494	Oct 2023	10.124	Oct 2024	-		10.124	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	SS/CPFF	Lockheed Martin : Moorestown, NJ	18.234	0.000		0.000		0.000		-		0.000	0.000	18.234	-
SYSTEM ENGINEERING	SS/CPFF	AEGIS Techrep : Moorestown, NJ	1.437	0.234	Mar 2023	0.217	Feb 2024	0.333	Feb 2025	-		0.333	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	SS/FP	APL/JHU : Laurel, MD	2.791	0.485	Nov 2022	0.455	Nov 2023	0.455	Nov 2024	-		0.455	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	WR	SCSTC : Dahlgren, VA	0.945	0.079	Nov 2022	0.074	Nov 2023	0.168	Nov 2024	-		0.168	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	WR	NRL : Washington, DC	2.191	0.511	Nov 2022	0.695	Nov 2023	0.850	Nov 2024	-		0.850	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	MIPR	MIT/LL : Lexington, MA	2.359	0.611	Jan 2023	0.625	Feb 2024	0.625	Feb 2025	-		0.625	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	WR	NSWC DD : Dahlgren, VA	9.169	2.659	Oct 2022	2.366	Oct 2023	2.706	Oct 2024	-		2.706	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	WR	NSWC/PHD : Port Hueneme, CA	1.075	0.217	Nov 2022	0.339	Nov 2023	0.889	Nov 2024	-		0.889	Continuing	Continuing	Continuing
SYSTEM ENGINEERING	MIPR	DTIC : Fort Belvoir, VA	0.284	0.000		0.000		0.000		-		0.000	0.000	0.284	-
SYSTEM ENGINEERING	WR	SCSC Wallops : Wallops Island, VA	0.032	0.000		0.000		0.000		-		0.000	0.000	0.032	-
SYSTEM ENGINEERING	C/FFP	Raytheon : Waltham, MA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
		Subtotal	71.110	7.774		9.265		16.150		-		16.150	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Increase in FY25 supports the start of ACE Phase 2 and DMSMS Tech Solutions, continues ACB 16 COTS Refresh ECPs, MMSP/MMSP-R Technology Refresh development, continuation of MMSP ECP and software updates realigned from PU 3232, and conducts ERACE Phase 1/2 CP-24 Certification.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Allot	PEOIWS2 : Washington, DC	0.065	0.020	Mar 2023	0.020	Jan 2024	0.030	Jan 2025	-		0.030	Continuing	Continuing	Continuing
Support Management Services	C/CPIF	SPA : Washington, DC	1.928	0.390	Apr 2023	0.450	Dec 2023	0.800	Dec 2024	-		0.800	Continuing	Continuing	Continuing
Support Management Services	SS/CPIF	SPA (ESS Bridge) : Washington, DC	0.330	0.000		0.000		0.000		-		0.000	0.000	0.330	-
Support Management Services	SS/CPIF	SPA (PSS Bridge) : Washington, DC	0.181	0.000		0.000		0.000		-		0.000	0.000	0.181	-
		Subtotal	2.504	0.410		0.470		0.830		-		0.830	Continuing	Continuing	N/A

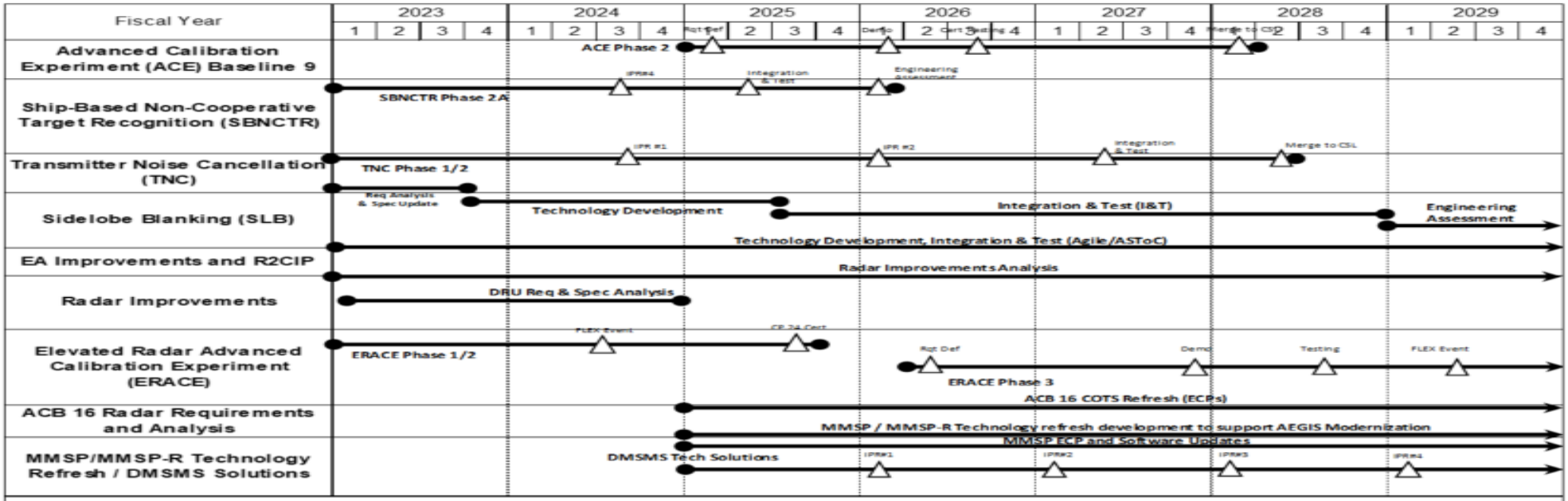
Remarks

Increase in FY25 is a result of the realignment of funding and tasking from PU 3232 to PU 3301.

	Prior Years	FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	73.614	8.184		9.735		16.980		-		16.980	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*



Since the FY24 budget request, PE 0604501N MMSP PU 3232 was realigned to SPY-1 PU 3301 starting in FY25.
SLB, EA Improvements and R2CIP, Radar Improvements, ERACE Phase 3, ACB 16 Radar Requirements and Analysis and MMSP/MMSP-R Technology Refresh / DMSMS Solutions continue beyond the FYDP.
Since the FY24 budget request, the end of SBNCTR Phase 2A, including all milestones delayed 3 Qtrs as a result of the insertion of Phase 2A IPR #4 in FY24 to address machine learning with advanced computing techniques. SBNCTR Phase 3 cancelled due to funding reductions.
Since the FY24 budget request, TNC IPR#2, I&T, and Merge to CSL delayed 1 Qtr due to funding reductions.
Since the FY24 budget request, DRU development has been cancelled.
Since the FY24 budget request, ERACE Phase 1/2 FLEX Event shifted 3 Qtrs and CP 24 Cert shifted 5 Qtrs to align and integrate into the baseline. Subsequently, the start of ERACE Phase 3 and all milestones delayed 6 Qtrs.
Since the FY24 budget request, ACB 16 COTS Refresh, MMSP/MMSP-R Technology refresh development to support AEGIS Modernization and MMSP ECP and software updates have been realigned from PU 3232 to continue in FY25, and DMSMS Tech Solutions commences in FY25.
Since the FY24 budget request, all DMSMS Tech Solution milestones delayed 2 Qtrs due to funding reductions.
Historically, Radar Improvement efforts focused on transmitter upgrades. Scope has expanded to include Signal Processor and Antenna groups as well as transmitter group.

Acronyms:

ACB: AEGIS Capability Build
ASToC: AEGIS Speed to Capability
COTS: Commericial Off The Shelf
CP: Capability Package
CSL: Common Source Library
DMSMS: Diminishing Manufacturing Sources and Material Shortages
DRU: Digital Receive Upgrage
EA: Electronic Attack
ECP: Engineering Change Proposal
FLEX: Fleet Exercise
IPR: In-Process Review
R2CIP: Rapid Radar Capability Improvement Program

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3301				
SLB Requirements Analysis and Specification	1	2023	3	2023
EA Improvements and R2CIP Technology Development, Integration & Test	1	2023	4	2029
Radar Improvements Analysis	1	2023	4	2029
DRU Requirements & Specification Analysis	1	2023	4	2024
SLB Technology Development	4	2023	2	2025
ERACE Phase 1/2 Flex Event	3	2024	3	2024
SBNCTR Phase 2A IPR #4	3	2024	3	2024
TNC Phase 1/2 IPR #1	3	2024	3	2024
ACE Phase 2 Requirements Definition	1	2025	1	2025
ACB16 COTS Refresh (ECPs)	1	2025	4	2029
MMSP/MMSP-R Technology Refresh to Support AEGIS Modernization	1	2025	4	2029
MMSP ECP and Software Updates	1	2025	4	2029
DMSMS Tech Solution	1	2025	4	2029
SBNCTR Phase 2A Integration & Test	2	2025	2	2025
ERACE Phase 1/2 CP24-1 Certification	3	2025	3	2025
SLB Integration and Test	3	2025	4	2028
DMSMS Tech Solutions IPR #1	1	2026	1	2026
TNC Phase 1/2 IPR #2	1	2026	1	2026
ACE Phase 2 Demo	1	2026	1	2026
SBNCTR Phase 2A Engineering Assessment	1	2026	1	2026
ERACE Phase 3 Requirements Definition	2	2026	2	2026

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604501N / *Advanced Above Water Sensors*	**Project (Number/Name)** 3301 / *Improved Capabilities SPY-1 Radar*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ACE Phase 2 Certification Testing	3	2026	3	2026
DMSMS Tech Solutions IPR #2	1	2027	1	2027
TNC Phase 1/2 Integration and Test	2	2027	2	2027
ERACE Phase 3 Demo	4	2027	4	2027
DMSMS Tech Solutions IPR #3	1	2028	1	2028
ACE Phase 2 Merge to CSL	1	2028	1	2028
TNC Phase 1/2 Merge to CSL	2	2028	2	2028
ERACE Phase 3 Testing	3	2028	3	2028
DMSMS Tech Solutions IPR #4	1	2029	1	2029
SLB Engineering Assessment	1	2029	4	2029
ERACE Phase 3 Flex Event	2	2029	2	2029