Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0604127N *I Surface Mine Countermeasures*							
COST ($ in Millions)	**Prior Years**	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
Total Program Element	151.718	18.050	12.507	12.959	-	12.959	16.069	15.426	13.615	13.744	Continuing	Continuing
0530: *Mine Hunt Systems*	23.382	8.074	5.121	2.121	-	2.121	5.664	5.166	4.366	4.384	Continuing	Continuing
1233: *Surface MCM Mid-life Upgrade*	111.190	1.021	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	112.211
1235: *Mine Warfare Planning and Analysis*	17.146	8.955	7.386	10.838	-	10.838	10.405	10.260	9.249	9.360	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Surface Mine Countermeasures (SMCM) Program Element (PE) provides resources in support of development of mine countermeasures systems to provide minehunting and neutralization to counter known and projected mine threats. The mine countermeasures systems provide mobile, quick reaction forces capable of land or sea-based minehunting and neutralizing operations worldwide. Resources are for developing and deploying advanced minehunting and neutralization systems and the intelligence and oceanographic capabilities that will enable mine warfare superiority. Tactics and techniques used vary across a diversity of environments and a diversity of threats, including both asymmetric and emerging. Resources provide for systems and support of mine warfare systems, maritime systems, and expeditionary systems to allow for continuous operations of the Navy's warships and support vessels, other military vessels, and commercial vessels. Increased capability includes conducting minefield reconnaissance (mine density and location) at high area search rates; improving detection capability; decreasing sensor false alarm rates; reducing or eliminating post-mission analysis detect, classify, identify, decide time; improving neutralization time; improving network communications; automatic target recognition; and achieving in-stride detect-to-engage capability. The Surface Mine Countermeasures programs are in general platform independent and will provide detection, classification, localization, identification, neutralization, and influence clearance capabilities. Programs develop: (1) Unmanned minehunting capability for surface platforms; (2) the integration and improvement of new and existing systems (3) support for systems which detect, localize, classify, identify, and neutralize all mine types across MCM Avenger Class, Littoral Combat Ship (LCS) Class and other platforms.

1) The AN/AQS-20 is a minehunting and identification system with sensors housed in an underwater towed body. The sensors are designed for the detection, classification and localization of bottom, close-tethered, and volume targets, and for the identification of bottom targets. The system can be deployed from the Littoral Combat Ship (LCS) as part of the MCM Mission Package or can be deployed from other Vessels of Opportunity (VOO). The MCM USV is the tow platform for the AN/AQS-20.

2) AN/SQQ-32(V)4 High-Frequency, Wide Band (HFWB) is a technology upgrade to the AN/SQQ-32 Towed Body which incorporated HFWB technology into the detection sonar to address performance deficiencies against new mine threats in the littorals. This upgrade was installed on MCM-1 Class ships.

3) AN/SLQ-60 Mine Neutralization System (MNS) Seafox on the MCM Class ships. MNS is the replacement to the existing AN/SLQ-48 Mine Neutralization System.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604127N *I Surface Mine Countermeasures*

5) Mine Warfare and Environmental Decision Aids Library (MEDAL) is the U.S. Navy's single Mine Warfare (MIW) tactical decision support system for integrated mission planning, evaluation, and situational awareness. MEDAL provides mine warfare planning and evaluation tools and databases to mine countermeasures (MCM) Commanders and is employed at the unit level to perform MCM sortie planning and evaluation. The most recent MEDAL increment, known as MEDAL Enterprise Architecture (EA), is no longer dependent on Global Command and Control System - Maritime (GCCS-M) for fielding to MIW fleet users. MEDAL EA is a family of systems, comprised of the following three components: MINEnet Global, MINEnet Tactical, and Minefield Planning. MINEnet Global is a shore-based website that provides MIW waterspace awareness functionality to support Navy non-MIW forces.

MINEnet Global is a shore-based website that provides MIW waterspace awareness functionality to support Navy non-MIW forces. MINEnet Global provides downloadable reference databases, MIW reference publications and links to MIW information. The MINEnet Tactical component is a software application which provides MCM tactical planning, situational awareness and post mission evaluation capabilities. It is fielded to standard Navy networks including, Consolidated Afloat Networks and Enterprise Services (CANES), Integrated Shipboard Network System (ISNS), and Navy Marine Corps Intranet (NMCI) servers and uses common web browsers as the user interface. Minefield Planning is also a tactical software application which provides the capability to plan mining operations.

6) MIW Integrated Synthetic Trainer (MIST) will provide integrated phase training for MIW staffs in end-to-end MCM scenarios. This tool will provide the capability to train the U.S. Navy's four MIW staffs against near peer threats. It will incorporate the laydown of simulated threat minefields expected to be used to blockade ports, defend against landing assaults, or deny access to sea lines of communication to control the training event.

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	18.670	13.655	0.000	-	0.000
Current President's Budget	18.050	12.507	12.959	-	12.959
Total Adjustments	-0.620	-1.148	12.959	-	12.959
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-1.148			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.620	0.000			
• Program Adjustments	0.000	0.000	0.000	-	0.000
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	12.959	-	12.959

Change Summary Explanation

FY 2021 reflects a net decrease of $620K for SBIR assessments.

FY 2022 reflects $1.148K Congressional Directed Reduction for previously funded product development in Project 1235.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy	Date: April 2022
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604127N *I Surface Mine Countermeasures*

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604127N / *Surface Mine Countermeasures*	Project (Number/Name) 0530 / *Mine Hunt Systems*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
0530: *Mine Hunt Systems*	23.382	8.074	5.121	2.121	-	2.121	5.664	5.166	4.366	4.384	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The FY 2023 funding request was reduced by $1.093M to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

The Mine Hunt Systems project contains resources for systems, subsystems, and sensors integrated for use with the Mine Countermeasures Unmanned Surface Vehicle (MCM USV) for mine detection, classification, localization, identification, and neutralization capabilities. Research, development, test, and evaluation efforts are for increasing capability by decreasing time required to conduct Mine Countermeasures (MCM) operations, ensuring low risk to naval and commercial vessels, and removing the man from the minefield. Increased capability includes conducting minefield reconnaissance (mine density and location) at high area search rates, improving detection capability, decreasing sensor false alarm rates, and reducing post-mission analysis time for detection, classification, and identification.

The AN/AQS-20 is a minehunting and identification system with sensors housed in an underwater towed body. The AN/AQS-20 integrates the High Frequency Wideband Forward Looking Sonar (HFWBFLS), multifunction Synthetic Aperture Sonar (SAS), and Digital Gap Fill Sonar (DGFS) for the detection, classification and localization of bottom, close-tethered, volume, and near-surface targets. Integration of the Electro-Optic Identification (EOID) sensor enables identification of bottom targets. The system can be deployed from the Littoral Combat Ship (LCS) as part of the MCM Mission Package (MP) or can be deployed from other Vessels of Opportunity (VOO). The MCM USV is the tow platform for the AN/AQS-20. Materiel reliability, obsolescence, and performance Engineering Change Proposal (ECP) efforts continue beyond FY 2027. In FY 2022, the AN/AQS-20 Program will complete DT/OT with MCM USV, and support the MCM Mission Package (MP) IOT&E. Completion of DT/OT with the MCM USV will satisfy AN/AQS-20 IOT&E requirements.

In FY 2023, the AN/AQS-20 program will continue development of Automated Target Recognition (ATR) efforts, ensure compliance with cybersecurity requirements, and resolve system obsolescence. Based on MCM MP IOT&E and MCM USV DT/OT, expect to complete NSAM integration planning and ECPs from test. Offshore integration and test will verify product development efforts, and design upgrades due to obsolescence.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: AN/AQS-20 Product Development	3.251	2.517	1.161	0.000	1.161
Articles:	-	-	-	-	-
FY 2022 Plans: - Implement AN/AQS-20 Block 2 PMA improvements based on MCM MP Tech Evaluation + MCM USV DT					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 0530 / *Mine Hunt Systems*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Develop in-stride high resolution image to help improve identification requirement for AN/AQS-20 - Develop user tools to improve interim Post Mission Analysis (iPMA) performance and user interface to improve Sailor performance - Continue development of super classification of mines by leveraging machine learning - Continue improvement of ATR by leveraging machine learning through mission data labeling and generating library - Initiate software modification to meet cyber security requirement ***FY 2023 Base Plans:*** - Continue development of user tools to improve iPMA performance and user interface to improve Sailor performance - Develop test plan and tactics for implementation of in-stride high resolution image supporting identification requirement on AN/AQS-20 - Continue development of super classification of mines by leveraging machine learning - Improve ATR by leveraging machine learning through algorithm development and multi sensor data fusion to increase probability of detection and reduced false cells. - Complete ECPs to resolve findings from MCM USV TECHEVAL & IOT&E and MCM MP TECHEVAL & IOT&E for LCS Independence Variant ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Slight decrease in FY23 due to the implementation of AN/AQS-20 Block 2 PMA improvements and NSAM integration complete efforts from FY22.					
Title: AN/AQS-20 Support	0.800	0.800	0.484	0.000	0.484
Articles:	-	-	-	-	-
FY 2022 Plans: - Provide ongoing technical and management support to AN/AQS-20 product development - Continue to conduct test minefield maintenance to verify sonar performance through MCM USV DT and MCM MP IOT&E - Assess, score, and update AN/AQS-20 Block 2 tactics based on Mission Planning and Post Mission Analysis performance improvement from ATR and iPMA improvements - Provide engineer support to meet cyber security RMF process					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 0530 / *Mine Hunt Systems*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Provide engineer support for FRP units modification and design upgrades due to obsolescence ***FY 2023 Base Plans:*** - Provide ongoing technical and management support to AN/AQS-20 product development - Provide engineer support to meet cyber security RMF process - Provide engineer support for FRP units modification and design upgrades due to obsolescence - Continue assess, score, and update AN/AQS-20 Block 2 tactics based on Mission Planning and Post Mission Analysis performance improvement from ATR and iPMA improvements ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Slight decrease in FY23 due to the implementation of AN/AQS-20 Block 2 PMA improvements and NSAM integration complete efforts from FY22.					
Title: AN/AQS-20 Test and Evaluation	3.561	1.612	0.340	0.000	0.340
Articles:	-	-	-	-	-
FY 2022 Plans: - Support MCM USV TECHEVAL & IOT&E - Support MCM MP TECHEVAL & IOT&E for LCS Independence Variant - Integration and test of Bi-Static EOID performance and validate against legacy sensor ***FY 2023 Base Plans:*** -Conduct test planning for off shore integration and test to verify product development efforts, and design upgrades due to obsolescence ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Decrease in FY23 due to the conclusion of efforts in support of TECHEVAL & IOT&E for USV and the MCM MP on Independence variant.					
Title: AN/AQS-20 Management Services	0.462	0.192	0.136	0.000	0.136
Articles:	-	-	-	-	-
FY 2022 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 0530 / *Mine Hunt Systems*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Provide planning and management for the AN/AQS-20 program - Continue to provide Program Office travel support - Continue support for sonar and iPMA technical refresh efforts ***FY 2023 Base Plans:*** - Provide planning and management for the AN/AQS-20 program - Continue to provide Program Office travel support ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Slight decrease in FY23 due to the implementation of AN/AQS-20 Block 2 PMA improvements and NSAM integration complete efforts from FY22.					
Accomplishments/Planned Programs Subtotals	8.074	5.121	2.121	0.000	2.121

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• OPN/1601: *LCS MCM Mission Modules*	189.397	30.119	94.987	-	94.987	165.038	180.874	163.658	121.516	1,496.842	2,855.192

Remarks

OPN/1601 - The above funding line accounts for several programs, of which the Mine Hunt Systems program is only a portion.

D. Acquisition Strategy

AN/AQS-20 Low-Rate Initial Production (LRIP) procurement continued following the Block 2 (AQS-20C units) competitive contract award in FY 2014. In FY 2020, the AN/AQS-20 program leveraged the Unmanned Surface Vehicle (USV) Family of Systems (FoS) Indefinite Delivery Indefinite Quantity (IDIQ) Multiple Award Contract (MAC) to award multiple risk reduction efforts. The risk reduction efforts helped increase competition for FY 2025 sonar production. The risk reduction effort transitioned volume sonar capability and familiarized industry to specific sonar requirement based on the finding from FY 2019 market research. In FY 2021, a sole-source AN/AQS-20A (Block 1) to AN/AQS-20C (Block 2) upgrade contract was awarded to Raytheon to continue delivering sonars to support integration and testing for the LCS MCM MP. Risk reduction effort will inform the update of acquisition documentation in 2023 in order to define the next generation Minehunt Towed Sonar and ensure future competition. In the FY 2024 Request for Proposal will initiate competition for the FY 2025 sonar production contract.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604127N / *Surface Mine Countermeasures*	Project (Number/Name) 0530 / *Mine Hunt Systems*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/AQS-20 Block 2 MCM USV Integration	C/CPFF	Raytheon : Portsmouth, RI	0.300	0.000		1.117	Nov 2021	0.000		-		0.000	0.000	1.417	-
AN/AQS-20 P3I	C/CPFF	Raytheon : Portsmouth, RI	3.408	1.551	Nov 2020	0.315	Nov 2021	0.531	Nov 2022	-		0.531	Continuing	Continuing	Continuing
AN/AQS-20 P3I	C/CPFF	ARL/UT : Austin, TX	0.350	1.000	Nov 2020	0.485	Nov 2021	0.100	Nov 2022	-		0.100	Continuing	Continuing	Continuing
AN/AQS-20 Block 2 PMA	WR	NSWC, PC : Panama City, FL	2.000	0.100	Oct 2020	0.250	Oct 2021	0.300	Oct 2022	-		0.300	Continuing	Continuing	Continuing
AN/AQS-20 Block 2 PMA	C/CPFF	ARL/UT : Austin, TX	2.078	0.100	Dec 2020	0.350	Dec 2021	0.230	Dec 2022	-		0.230	Continuing	Continuing	Continuing
AN/AQS-20 Risk Reduction	C/FFP	Various : Various	0.000	0.500	Dec 2020	0.000		0.000		-		0.000	0.000	0.500	-
		Subtotal	8.136	3.251		2.517		1.161		-		1.161	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/AQS-20 Engineering Services	WR	NUWC/NPT : Newport, RI	0.365	0.000		0.000		0.000		-		0.000	0.000	0.365	-
AN/AQS-20 Engineering Services	WR	NSWC, PC : Panama City, FL	0.361	0.140	Oct 2020	0.140	Oct 2021	0.140	Oct 2022	-		0.140	Continuing	Continuing	Continuing
AN/AQS-20 Engineering Services	C/CPFF	Raytheon : Portsmouth, RI	0.551	0.200	Nov 2020	0.200	Nov 2021	0.200	Nov 2022	-		0.200	Continuing	Continuing	Continuing
AN/AQS-20 ILS Function	WR	NSWC, PC : Panama City, FL	1.176	0.460	Nov 2020	0.460	Nov 2021	0.144	Nov 2022	-		0.144	Continuing	Continuing	Continuing
		Subtotal	2.453	0.800		0.800		0.484		-		0.484	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/AQS-20 T&E Functions	WR	COTF : Norfolk, VA	0.575	0.200	Nov 2020	0.358	Nov 2021	0.038	Nov 2022	-		0.038	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 0530 / *Mine Hunt Systems*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/AQS-20 T&E Functions	WR	NSWC, PC : Panama City, FL	9.207	2.851	Oct 2020	0.759	Oct 2021	0.225	Oct 2022	-		0.225	Continuing	Continuing	Continuing
AN/AQS-20 T&E Functions	C/CPFF	Raytheon : Portsmouth, RI	1.510	0.510	Nov 2020	0.495	Nov 2021	0.077	Nov 2022	-		0.077	Continuing	Continuing	Continuing
		Subtotal	11.292	3.561		1.612		0.340		-		0.340	Continuing	Continuing	N/A

Remarks

COTF - Commander Operational Test and Evaluation Force

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/AQS-20 Management Services	TBD	Various : Various	1.410	0.432	Dec 2020	0.172	Dec 2021	0.116	Dec 2022	-		0.116	Continuing	Continuing	Continuing
AN/AQS-20 Travel	TBD	Various : Various	0.091	0.030	Mar 2021	0.020	Mar 2022	0.020	Mar 2023	-		0.020	Continuing	Continuing	Continuing
		Subtotal	1.501	0.462		0.192		0.136		-		0.136	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	23.382	8.074		5.121		2.121		-		2.121	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 0530 / *Mine Hunt Systems*

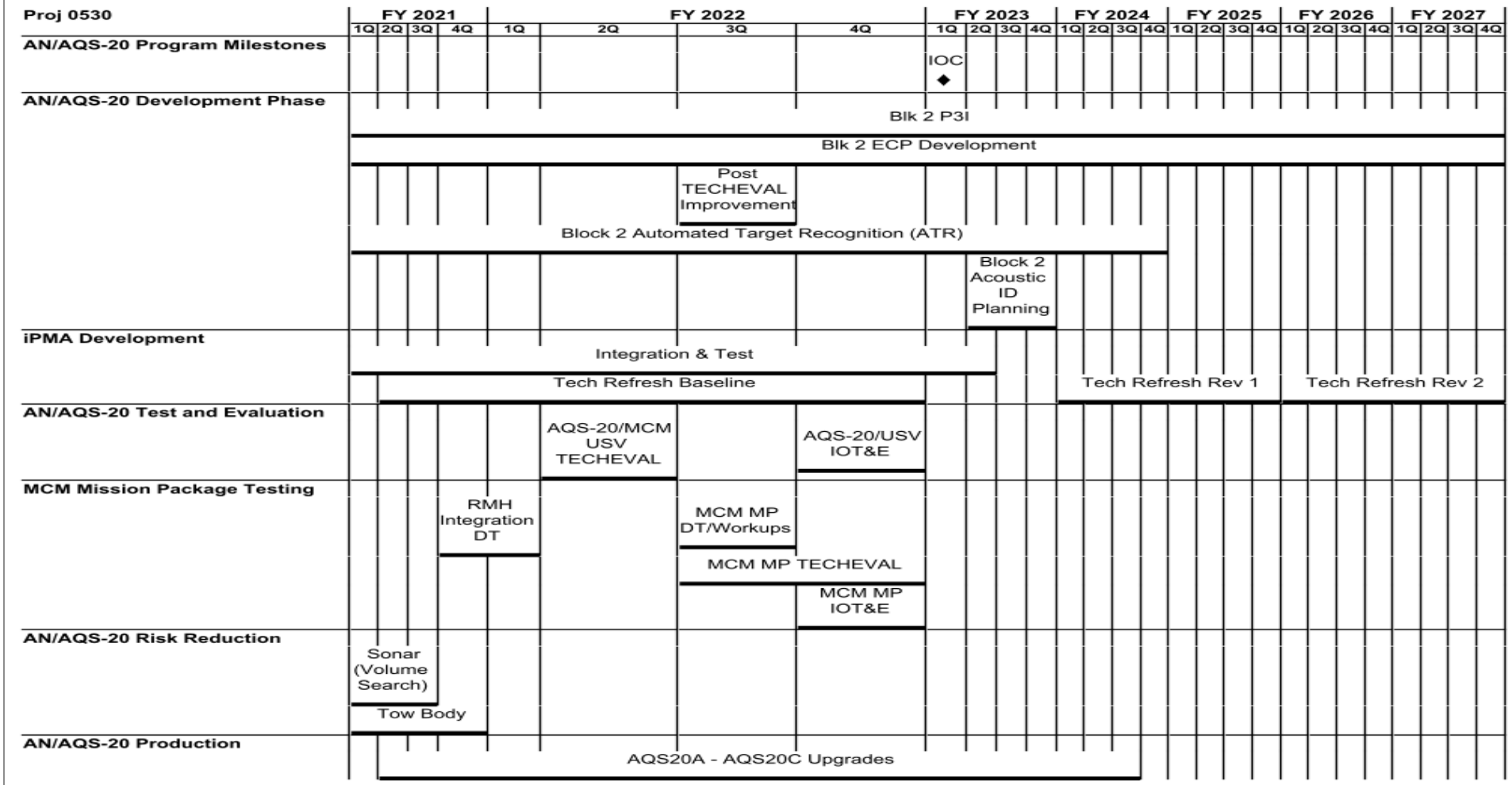

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 0530 / *Mine Hunt Systems*

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 0530 / *Mine Hunt Systems*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0530				
AN/AQS-20 Program Milestones: Initial Operational Capability (IOC)	1	2023	1	2023
AN/AQS-20 Development Phase: AN/AQS-20 Block 2 P3I	1	2021	4	2027
AN/AQS-20 Development Phase: AN/AQS-20 Materiel Reliability, Obsolesence, and Performance ECP Development (Block 2)	1	2021	4	2027
AN/AQS-20 Development Phase: AN/AQS-20/MCM USV Post TECHEVAL Improvement	3	2022	3	2022
AN/AQS-20 Development Phase: AN/AQS-20 Block 2 Automated Target Recognition (ATR)	1	2021	4	2024
AN/AQS-20 Development Phase: AN/AQS-20 Block 2 Acoustic Identification Test Planning	2	2023	4	2023
iPMA Development: iPMA/NSAM Integration and Test	1	2021	2	2023
iPMA Development: iPMA Tech Refresh Baseline	2	2021	4	2022
iPMA Development: Tech Refresh Rev 1	1	2024	4	2025
iPMA Development: Tech Refresh Rev 2	1	2026	4	2027
AN/AQS-20 Test and Evaluation: AN/AQS-20/MCM USV TECHEVAL	2	2022	2	2022
AN/AQS-20 Test and Evaluation: AN/AQS-20/MCM USV IOT&E	4	2022	4	2022
MCM Mission Package Testing: RMH MM/LCS Integration DT (DT-B10 Phase 3)	4	2021	1	2022
MCM Mission Package Testing: MCM MP Developmental Testing/Workups	3	2022	3	2022
MCM Mission Package Testing: MCM MP Tech Eval	3	2022	4	2022
MCM Mission Package Testing: MCM MP IOT&E	4	2022	4	2022
AN/AQS-20 Risk Reduction: Risk Reduction Sonar (Volume Search)	1	2021	3	2021
AN/AQS-20 Risk Reduction: Risk Reduction Tow Body	1	2021	4	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 0530 / *Mine Hunt Systems*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
AN/AQS-20 Production: AN/AQS20A - AQS20C Upgrades	2	2021	3	2024

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604127N / *Surface Mine Countermeasures*	Project (Number/Name) 1233 / *Surface MCM Mid-life Upgrade*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
1233: *Surface MCM Mid-life Upgrade*	111.190	1.021	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	112.211
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Surface MCM Mid-life Upgrade project provided resources for development, improvement and integration of AN/SSQ-94 MCM Trainer. Trainer upgrade incorporated the AN/ SQQ-32 (V)4 sonar, AN/SSN2(V)5 PINS and Mine Neutralization System Team Trainer.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Product Development	1.021	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: AN/SSQ-94 MCM Trainer Development					
FY 2022 Plans: N/A					
FY 2023 Base Plans: N/A					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: N/A					
Accomplishments/Planned Programs Subtotals	1.021	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

AN/SSQ-94 - Naval Surface Warfare Center, Panama City (NSWC, PC) and ARL UT designed and developed the SSQ-94 MCM Trainer.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1233 / *Surface MCM Mid-life Upgrade*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MNS Development	Various	TBD : TBD	22.455	0.000		0.000		0.000		-		0.000	0.000	22.455	-
SSQ-94 Trainer	WR	NSWC, PC : NSWC, PC	17.315	1.021	Dec 2020	0.000		0.000		-		0.000	0.000	18.336	-
BSP: Develop Bottom Sediment Classifier	WR	NRL : WASHINGTON, DC	0.258	0.000		0.000		0.000		-		0.000	0.000	0.258	-
Systems Engineering and Integration	WR	NSWC, PC : PANAMA CITY, FL	0.306	0.000		0.000		0.000		-		0.000	0.000	0.306	-
System Development 1	WR	NSWC, PC : SAN DIEGO, CA	0.373	0.000		0.000		0.000		-		0.000	0.000	0.373	-
Systems Engineering 2	WR	NSWC, PC : PANAMA CITY, FL	2.915	0.000		0.000		0.000		-		0.000	0.000	2.915	-
Systems Engineering 3 MCM CES	WR	NSWC, PC : PANAMA CITY, FL	1.633	0.000		0.000		0.000		-		0.000	0.000	1.633	-
HFWB: Primary Hardware Development 1	C/CPAF	ARL UT : TEXAS	15.511	0.000		0.000		0.000		-		0.000	0.000	15.511	-
Primary Hardware Development 2	WR	ARL-UT : AUSTIN, TX	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
HFWB: Tow Cable Development	C/CPAF	ARL UT : TEXAS	1.399	0.000		0.000		0.000		-		0.000	0.000	1.399	-
HFWB: Ship Integration	WR	NSWC, PC : PANAMA CITY, FL	1.697	0.000		0.000		0.000		-		0.000	0.000	1.697	-
HFWB: SYSTEM ENGINEER	C/CPAF	ARL UT : TEXAS	9.065	0.000		0.000		0.000		-		0.000	0.000	9.065	-
		Subtotal	72.927	1.021		0.000		0.000		-		0.000	0.000	73.948	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Develop Logistics Products	WR	NSWC, PC : PANAMA CITY, FL	0.243	0.000		0.000		0.000		-		0.000	0.000	0.243	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604127N / *Surface Mine Countermeasures*	Project (Number/Name) 1233 / *Surface MCM Mid-life Upgrade*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
HFWB Software Development	C/CPAF	ARL-UT : TEXAS	8.450	0.000		0.000		0.000		-		0.000	0.000	8.450	-
HFWB Integrated Logistics Support	WR	NSWC, PC : PANAMA CITY, FL	2.765	0.000		0.000		0.000		-		0.000	0.000	2.765	-
Software Engineering 1 MCM CES	WR	NSWC, PC : PANAMA CITY, FL	1.517	0.000		0.000		0.000		-		0.000	0.000	1.517	-
Software Engineering 2 MEDAL	WR	NSWC, PC : PANAMA CITY, FL	2.458	0.000		0.000		0.000		-		0.000	0.000	2.458	-
		Subtotal	15.433	0.000		0.000		0.000		-		0.000	0.000	15.433	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MCM CES Test and Evaluation 1	C/CPAF	VARIOUS : VARIOUS	1.782	0.000		0.000		0.000		-		0.000	0.000	1.782	-
HFWB: Developmental Test and Evaluation	C/CPAF	ARL-UT : TEXAS	5.925	0.000		0.000		0.000		-		0.000	0.000	5.925	-
Test and Evaluation 2	C/CPAF	VARIOUS : VARIOUS	5.204	0.000		0.000		0.000		-		0.000	0.000	5.204	-
		Subtotal	12.911	0.000		0.000		0.000		-		0.000	0.000	12.911	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support 1	C/CPFF	CACI : WASHINGTON, DC	0.263	0.000		0.000		0.000		-		0.000	0.000	0.263	-
Travel 1	WR	NAVSEA : WNY, DC	0.084	0.000		0.000		0.000		-		0.000	0.000	0.084	-
Government Engineering Support1	WR	NSWC, PC : PANAMA CITY, FL	0.325	0.000		0.000		0.000		-		0.000	0.000	0.325	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604127N / *Surface Mine Countermeasures*	Project (Number/Name) 1233 / *Surface MCM Mid-life Upgrade*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MEDAL Program Management Support 2	Various	VARIOUS : VARIOUS	2.827	0.000		0.000		0.000		-		0.000	0.000	2.827	-
SBIR Assessment 2	Various	VARIOUS : VARIOUS	0.019	0.000		0.000		0.000		-		0.000	0.000	0.019	-
Program Management Support 3	C/CPFF	CACI : WASHINGTON, DC	1.341	0.000		0.000		0.000		-		0.000	0.000	1.341	-
Program Management Support 4	C/CPFF	CACI : WASHINGTON, DC	0.080	0.000		0.000		0.000		-		0.000	0.000	0.080	-
Government Engineering Support3	WR	NSWC, PC : PANAMA CITY, FL	0.090	0.000		0.000		0.000		-		0.000	0.000	0.090	-
Travel 3	C/CPAF	NAVSEA : WNY, DC	0.256	0.000		0.000		0.000		-		0.000	0.000	0.256	-
Program Management Support 5	C/CPFF	CACI : WASHINGTON, DC	0.167	0.000		0.000		0.000		-		0.000	0.000	0.167	-
Government Engineering Support4	WR	NSWC, PC : PANAMA CITY, FL	0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	-
Travel4	C/CPAF	NSWC, PC : PANAMA CITY, FL	0.069	0.000		0.000		0.000		-		0.000	0.000	0.069	-
HFWB: Program Management Support 6	C/CPAF	VARIOUS : VARIOUS	1.442	0.000		0.000		0.000		-		0.000	0.000	1.442	-
HFWB: Government Engineering Support5	WR	NSWC, PC : PANAMA CITY, FL	0.750	0.000		0.000		0.000		-		0.000	0.000	0.750	-
HFWB: Travel 5	C/CPAF	NAVSEA : WNY, DC	0.080	0.000		0.000		0.000		-		0.000	0.000	0.080	-
Government Engineering Support6	WR	NSWC, PC : PANAMA CITY, FL	1.352	0.000		0.000		0.000		-		0.000	0.000	1.352	-
Travel 6	C/CPAF	NAVSEA : WNY, DC	0.238	0.000		0.000		0.000		-		0.000	0.000	0.238	-
SBIR Assessment 6	Various	VARIOUS : VARIOUS	0.054	0.000		0.000		0.000		-		0.000	0.000	0.054	-
Program Management Support 7	C/CPAF	VARIOUS : VARIOUS	0.350	0.000		0.000		0.000		-		0.000	0.000	0.350	-
Acquisition Workforce Fund	Various	VARIOUS : VARIOUS	0.122	0.000		0.000		0.000		-		0.000	0.000	0.122	-
		Subtotal	9.919	0.000		0.000		0.000		-		0.000	0.000	9.919	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604127N / *Surface Mine Countermeasures*	Project (Number/Name) 1233 / *Surface MCM Mid-life Upgrade*	

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	111.190	1.021		0.000		0.000		-		0.000	0.000	112.211	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1233 / *Surface MCM Mid-life Upgrade*

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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
SSQ-94 Trainer																												
System Development: SSQ-94 MCS Trainer: SSQ-94 MCS Trainer Development	[redacted]																											

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1233 / *Surface MCM Mid-life Upgrade*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SSQ-94 Trainer				
System Development: SSQ-94 MCS Trainer: SSQ-94 MCS Trainer Development	1	2021	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604127N / *Surface Mine Countermeasures*	Project (Number/Name) 1235 / *Mine Warfare Planning and Analysis*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
1235: *Mine Warfare Planning and Analysis*	17.146	8.955	7.386	10.838	-	10.838	10.405	10.260	9.249	9.360	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

FY 2023 reflects a net increase of $2.304 million which is associated with the MEDAL program's ONR cost share for the C-ENCAP FNC.

The Mine Warfare Planning and Analysis project consists of two projects, the Mine Warfare and Environmental Decision Aids Library (MEDAL) and the Mine Warfare Integrated Synthetic Trainer (MIST).

MEDAL is the U.S. Navy's single MIW tactical decision support system for integrated mission planning, evaluation, and situational awareness. MEDAL provides mine warfare planning and evaluation tools and databases to mine countermeasures (MCM) Commanders and is employed at the unit level to perform MCM sortie planning and evaluation. The most recent MEDAL increment, known as MEDAL Enterprise Architecture (EA), is no longer dependent on Global Command and Control System - Maritime (GCCS-M) for fielding to MIW fleet users. MEDAL EA is a family of systems, comprised of the following three components: MINEnet Global, MINEnet Tactical, and Minefield Planning.

MINEnet Global is a shore-based website that provides MIW waterspace awareness functionality to support Navy non-MIW forces. MINEnet Global provides downloadable reference databases, MIW reference publications and links to MIW information. The MINEnet Tactical component is a software application which provides MCM tactical planning, situational awareness and post mission evaluation capabilities. It is fielded to standard Navy networks including, Consolidated Afloat Networks and Enterprise Services (CANES), Integrated Shipboard Network System (ISNS), and Navy Marine Corps Intranet (NMCI) servers and uses common web browsers as the user interface. Minefield Planning is also a tactical software application which provides the capability to plan mining operations.

MIST will be a synthetic trainer which will provide integrated phase training for MIW staffs in end-to-end MCM scenarios. This tool will provide the capability to train the U.S. Navy's four MIW staffs against near peer threats. It will incorporate the laydown of simulated threat minefields expected to be used to blockade ports, defend against landing assaults, or deny access to sea lines of communication to control the training event.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Product Development	3.331	2.024	6.173	0.000	6.173
Articles:	-	-	-	-	-
FY 2022 Plans: MEDAL:					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1235 / *Mine Warfare Planning and Analysis*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Continue MINEnet Tactical (MNT) v1.4 development, and update Tactical Performance Database (TPDB) with new system performance values. MIST: - Complete v0.2 prototype development and delivery. - Simulate Naval Mine Warfare message communication between Mine Countermeasures (MCM) Commanders (MCMCs) and subordinate MCM Units. -Begin v0.3 prototype - Scenario Generation software development to build, initiate, inject operational mission variables into, and provide debrief information for a training scenario. ***FY 2023 Base Plans:*** MEDAL: - Provide to Office of Naval Research (ONR), program office's share of development funds for Compact Encapsulated Effector (C-ENCAP) Future Naval Capability (FNC). C-ENCAP develops advanced Minefield Planning tools, which address a gap in advanced minefield planning and evaluation, with MEDAL. - Begin Minefield Planning v1.2 software development; version will begin incorporating draft Information System-Capability Development Document requirements and integrating C-ENCAP tools. - Continue MINEnet Tactical (MNT) v1.4 development through FY23. - Conduct annual tactical performance database (TPDB) update to add or refine weapons systems' performance values. MIST: - Complete v0.3 development and deliver v0.3 prototype for scenario generation. - Begin v1.0 end to end integration. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY 2022 to FY 2023 increase associated with the C-ENCAP FNC.					
Title: Engineering Support	4.713	4.437	3.721	0.000	3.721
Articles:	-	-	-	-	-
FY 2022 Plans: MEDAL:					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1235 / *Mine Warfare Planning and Analysis*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Continue MEDAL EA systems engineering technical management, assess critical issues and manage process to incorporate fixes. Continue requirements analysis of draft MEDAL Information Systems Capability Development Document (IS-CDD); begin developing engineering approach to meet IS-CDD initial minimum requirements. - Continue integrated logistics support and updates to logistics and training documents, including technical inputs to independent logistics assessments, core logistics analysis, and logistics requirements funding summary. - Conduct annual review of Navy training system plan, job-duty task analysis, front-end analysis, and Training Effectiveness Evaluation. - Conduct configuration management activities such as developing engineering change proposals to maintain hardware and software baselines. - Continue systems engineering, cybersecurity, and logistics documentation required for Milestone B. - Continue support to MCM Mission Package in preparation for their IOT&E. MIST: - Continue tactics scenario and curriculum development, cybersecurity requirements, design analysis, and continue training curriculum development. - Conduct v0.2 release review.					
FY 2023 Base Plans: MEDAL: - Continue MEDAL EA systems engineering technical management, assess critical issues and manage process to incorporate fixes. - Begin executing engineering plan to meet IS-CDD initial minimum requirements. - Continue integrated logistics support and updates to logistics and training documents, including technical inputs to independent logistics assessments, core logistics analysis, and logistics requirements funding summary. - Conduct annual review of Navy training system plan, job-duty task analysis, front-end analysis, and Training Effectiveness Evaluation. - Conduct configuration management activities such as developing engineering change proposals to maintain hardware and software baselines. - Begin development of training documents for MNT v1.4. MIST: - Continue assessing cybersecurity requirements and implementation, as well begin the risk management framework process to obtain an ATO.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1235 / *Mine Warfare Planning and Analysis*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Conduct requirements analysis for MIST V1.0 end to end integration, and continue training curriculum development. - Conduct v0.3 release review. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY 2023 decrease reflects deferral of C-ENCAP integration activities and deferral of training document development for MNT v1.4 to align with MNT v1.4 software development completion.					
Title: Test and Evaluation	0.350	0.358	0.365	0.000	0.365
Articles:	-	-	-	-	-
FY 2022 Plans: MEDAL: - Conduct MFP v1.1 Release Candidate Testing. -Complete MNT v1.3.3 Release Candidate Testing; version will support MCM Mission Package IOT&E. -Draft MEDAL Test and Evaluation Master Plan in preparation for Milestone B. ***FY 2023 Base Plans:*** MEDAL: -Update MEDAL Test and Evaluation Master Plan to address comments and feedback from stakeholders, in preparation for Milestone B. Continue MNT v1.4 increment testing. - Continue annual integration testing activities for multiple networks including LCS MCM MPAS, ISNS, ONENET, NMCI integration tests. MIST: - Conduct v0.3 prototype assessment. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1235 / *Mine Warfare Planning and Analysis*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
No significant scope changes from FY 2022 to FY 2023					
Title: Management Services	0.561	0.567	0.579	0.000	0.579
Articles:	-	-	-	-	-
FY 2022 Plans: MEDAL: - Continue to plan, track, follow-up and report on cost, schedule and performance status. - Conduct review of project technical processes. - Develop cross-functional plans, to meet draft IS-CDD requirements. - Plan, track, and follow-up on development of Milestone B documentation. MIST: - Continue to plan, track, follow-up and report on cost, schedule and performance status.					
FY 2023 Base Plans: MEDAL: - Continue to plan, track, follow-up and report on cost, schedule and performance status. - Conduct review of project technical processes. - Develop cross-functional plans, to meet draft IS-CDD requirements. -Conduct Milestone B and address actions following the Milestone B review. MIST: - Continue to plan, track, follow-up and report on cost, schedule and performance status.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: No significant scope changes from FY 2022 to FY 2023.					
Accomplishments/Planned Programs Subtotals	8.955	7.386	10.838	0.000	10.838

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1235 / *Mine Warfare Planning and Analysis*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 2622/LV075: *Mine Sweeping Replacement (MEDAL)*	0.005	0.349	0.577	-	0.577	0.576	0.589	0.601	0.000	0.000	2.697

Remarks

D. Acquisition Strategy

The MEDAL program is government led and executed. NSWC PCD is the lead government activity, and awarded a Seaport engineering services contract to Innovative Professional Solutions (IPS) in FY 2020 to provide additional engineering capacity across disciplines.

MIST is a government product designed, developed and supported at NSWC PCD.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604127N / *Surface Mine Countermeasures*	Project (Number/Name) 1235 / *Mine Warfare Planning and Analysis*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MEDAL EA	C/IDDQ	IPS : Panama City, FL	0.171	0.145	Oct 2020	0.145	Oct 2021	0.145	Oct 2022	-		0.145	Continuing	Continuing	Continuing
MEDAL EA & MIW Integrated Synthetic Training (MIST)	WR	NSWC PCD : Panama City FL	5.786	3.186	Oct 2020	1.879	Oct 2021	4.214	Oct 2022	-		4.214	Continuing	Continuing	Continuing
MEDAL EA & MIW Integrated Synthetic Training (MIST)	WR	Office of Naval Research : Various	0.000	0.000		0.000		1.814	Oct 2022	-		1.814	0.000	1.814	1.814
		Subtotal	5.957	3.331		2.024		6.173		-		6.173	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MEDAL EA & MIW Integrated Synthetic Training (MIST)	WR	NSWC PC : Panama City FL	7.662	4.032	Oct 2020	3.756	Oct 2021	3.026	Oct 2022	-		3.026	Continuing	Continuing	Continuing
MEDAL EA	C/IDDQ	IPS : Panama City FL	0.416	0.681	Oct 2020	0.681	Oct 2021	0.695	Oct 2022	-		0.695	Continuing	Continuing	Continuing
		Subtotal	8.078	4.713		4.437		3.721		-		3.721	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MEDAL EA & MIW Integrated Synthetic Training (MIST)	WR	NSWC PCD : Panama City, FL	1.025	0.320	Oct 2020	0.325	Oct 2021	0.331	Oct 2022	-		0.331	Continuing	Continuing	Continuing
MEDAL EA	C/IDDQ	IPS : Panama City, FL	0.496	0.030	Oct 2020	0.033	Oct 2021	0.034	Oct 2022	-		0.034	Continuing	Continuing	Continuing
		Subtotal	1.521	0.350		0.358		0.365		-		0.365	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1235 / *Mine Warfare Planning and Analysis*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MEDAL EA & MIW Integrated Synthetic Training (MIST)	WR	NSWC PC : Panama City Fl	1.590	0.290	Oct 2020	0.294	Oct 2021	0.301	Oct 2022	-		0.301	Continuing	Continuing	Continuing
MEDAL EA	C/IDDQ	IPS : Panama City, FL	0.000	0.271	Oct 2020	0.273	Oct 2021	0.278	Oct 2022	-		0.278	0.000	0.822	-
		Subtotal	1.590	0.561		0.567		0.579		-		0.579	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	17.146	8.955		7.386		10.838		-		10.838	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1235 / *Mine Warfare Planning and Analysis*

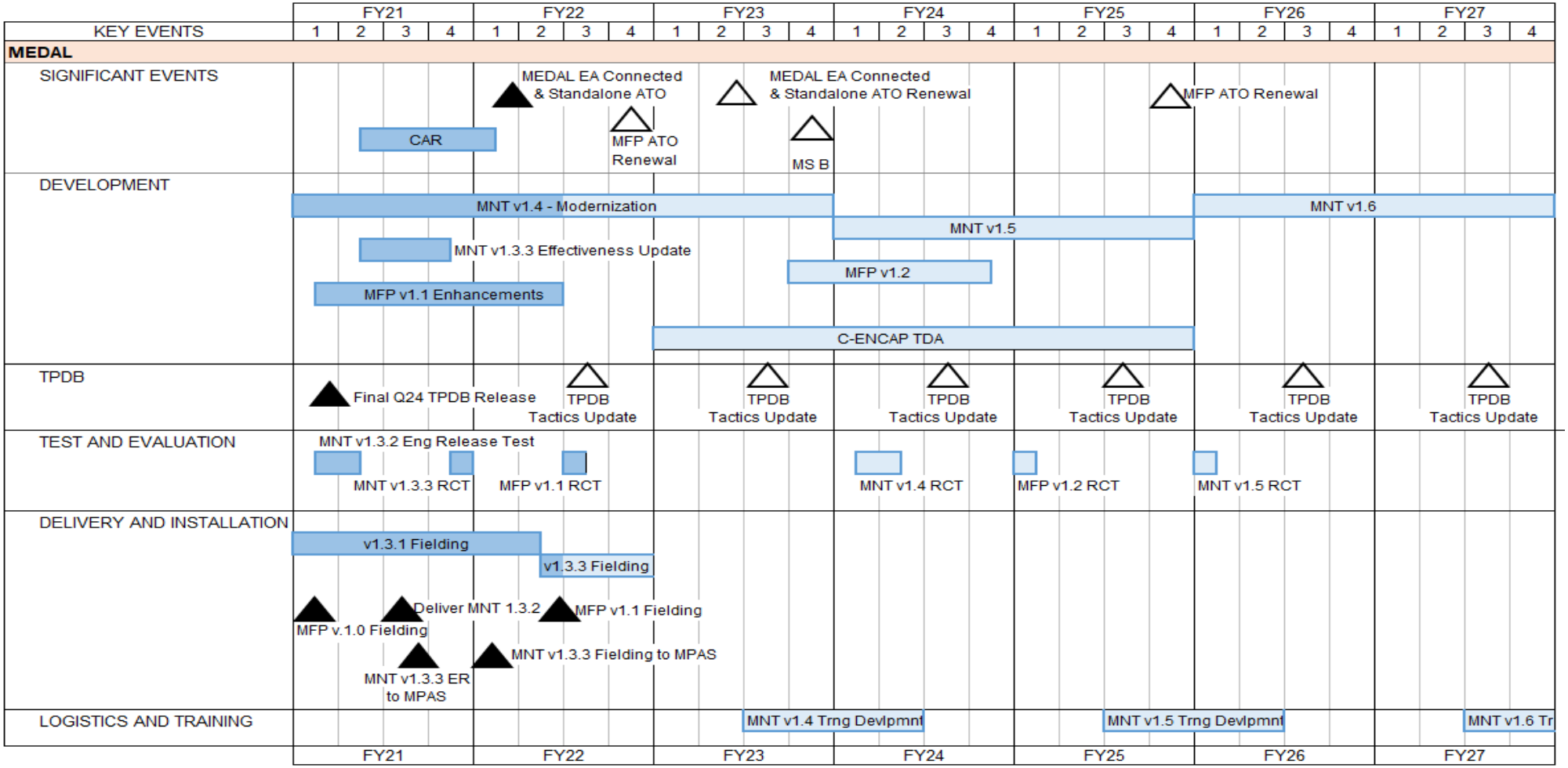

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1235 / *Mine Warfare Planning and Analysis*

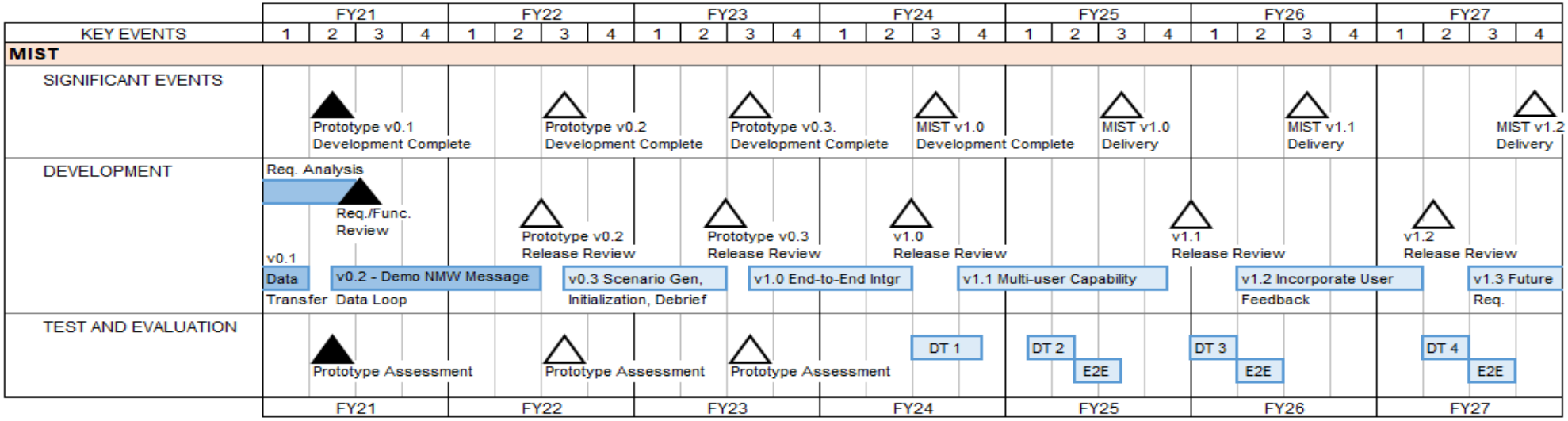

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1235 / *Mine Warfare Planning and Analysis*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MEDAL				
Significant Events: Milestone B	4	2023	4	2023
Significant Events: MFP ATO Renewal	4	2022	4	2022
Significant Events: MEDAL EA Connected & Standalone ATO Renewal	2	2023	2	2023
Significant Events: MFP ATO Renewal 2	4	2025	4	2025
Significant Events: MEDAL EA Development: MINEnet Tactical V1.3.2	1	2021	1	2021
Significant Events: CAR	2	2021	1	2022
Significant Events: MEDAL EA Connected & Standalone ATO Renewal 2	1	2022	1	2022
Significant Events: CDD	4	2022	4	2022
System Development: MEDAL EA Development: MEDAL EA Development: MINEnet Tactical v1.3.3	2	2021	4	2021
System Development: MEDAL EA Development: MEDAL EA Development: MINEnet Tactical v1.4	1	2021	4	2023
System Development: MEDAL EA Development: MEDAL EA Development: MINEnet Tactical v1.5	1	2024	4	2025
System Development: MEDAL EA Development: MEDAL EA Development: MINEnet Tactical v1.6	1	2026	4	2027
System Development: MEDAL EA Development: MEDAL EA Development: Minefield Planning v1.1 (MFP) Development	1	2021	2	2022
System Development: MEDAL EA Development: MEDAL EA Development: Minefield Planning v1.2 (MFP) Development	4	2023	4	2024
System Development: MEDAL EA Development: C-ENCAP TDA	1	2023	4	2025
Test and Evaluation: MEDAL EA T&E: MEDAL EA T&E: MINEnet Tactical v1.3.2	1	2021	2	2021
Test and Evaluation: MEDAL EA T&E: MEDAL EA T&E: MINEnet Tactical v1.3.3	4	2021	4	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1235 / *Mine Warfare Planning and Analysis*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test and Evaluation: MEDAL EA T&E: MEDAL EA T&E: MINEnet Tactical v1.4	1	2024	2	2024
Test and Evaluation: MEDAL EA T&E: MEDAL EA T&E: MINEnet Tactical v1.5	1	2026	1	2026
Test and Evaluation: MEDAL EA T&E: MEDAL EA T&E: MFP v1.1 Test & Evaluation	3	2022	3	2022
Test and Evaluation: MEDAL EA T&E: MEDAL EA T&E: MFP v1.2 Test & Evaluation	1	2025	1	2025
Delivery Milestones: MEDAL EA Fielding: MEDAL EA Fielding: MFP v1.0 Fielding	1	2021	1	2021
Delivery Milestones: MEDAL EA Fielding: MEDAL EA Fielding: MINENet Tactical v1.3.1 Fielding	1	2021	2	2022
Delivery Milestones: MEDAL EA Fielding: MEDAL EA Fielding: MINENet Tactical v1.3.2 Delivery	3	2021	3	2021
Delivery Milestones: MEDAL EA Fielding: MEDAL EA Fielding: MINENet Tactical v1.3.3 Engineering Release Delivery	3	2021	3	2021
Delivery Milestones: MEDAL EA Fielding: MEDAL EA Fielding: MINENet Tactical v1.3.3 Fielding to MPAS	1	2022	1	2022
Delivery Milestones: MEDAL EA Fielding: MEDAL EA Fielding: MINENet Tactical v1.3.3 Fielding	2	2022	4	2022
Delivery Milestones: MEDAL EA Fielding: MEDAL EA Fielding: MFP v1.1 Fielding	2	2022	2	2022
TBDP: Final Q24 TPDB Release	1	2021	1	2021
TBDP: Incremental TPDB Tactics Updates	3	2022	3	2027
MIW Integrated Synthetic Training (MIST)				
System Development: MIST Development: Development v0.1	1	2021	1	2021
System Development: MIST Development: Development v0.2	2	2021	2	2022
System Development: MIST Development: Development v0.3	3	2022	2	2023
System Development: MIST Development: Development v1.0	3	2023	2	2024
System Development: MIST Development: Development v1.1	4	2024	4	2025
System Development: MIST Development: Development v1.2	2	2026	1	2027
System Development: MIST Development: Development v1.3	3	2027	4	2027
System Development: MIST Development: Requirements and Functional Review	1	2021	3	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0604127N / *Surface Mine Countermeasures*	**Project (Number/Name)** 1235 / *Mine Warfare Planning and Analysis*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
System Development: MIST Development: Prototype v0.2 Release Review	2	2022	2	2022
System Development: MIST Development: Prototype v0.3 Release Review	2	2023	2	2023
System Development: MIST Development: v1.0 Release Review	2	2024	2	2024
System Development: MIST Development: v1.1 Release Review	4	2025	4	2025
System Development: MIST Development: v1.2 Release Review	2	2027	2	2027
Test & Evaluation: MIST T&E: v0.1 Fleet Prototype Assessment	2	2021	2	2021
Test & Evaluation: MIST T&E: v0.2 Fleet Prototype Assessment	3	2022	3	2022
Test & Evaluation: MIST T&E: v0.3 Fleet Prototype Assessment	3	2023	3	2023
Test & Evaluation: MIST T&E: v1.0 Developmental Test 1	3	2024	4	2024
Test & Evaluation: MIST T&E: v1.0 Developmental Test 2	1	2025	2	2025
Test & Evaluation: MIST T&E: v1.0 Developmental Test 3	1	2026	1	2026
Test & Evaluation: MIST T&E: v1.0 Developmental Test 4	2	2027	2	2027
Test & Evaluation: MIST T&E: v1.0 End to End Test	2	2025	3	2025
Test & Evaluation: MIST T&E: v1.0 End to End Test 2	2	2026	2	2026
Test & Evaluation: MIST T&E: v1.0 End to End Test 3	3	2027	3	2027
Delivery Milestones: MIST Fielding: v1.0 Delivery	3	2025	3	2025
Delivery Milestones: MIST Fielding: v1.1 Delivery	3	2026	3	2026
Delivery Milestones: MIST Fielding: v1.2 Delivery	4	2027	4	2027