Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy											Date: May 2021	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0206313M *I Marine Corps Comms Systems*							
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
Total Program Element	1,744.134	171.400	76.610	89.897	-	89.897	-	-	-	-	-	-
2270: *Exp Indirect Fire Gen Supt Wpn Sys*	332.939	27.664	25.978	27.568	-	27.568	-	-	-	-	-	-
2273: *Air Ops Cmd & Control (C2) Sys*	454.760	5.089	6.684	7.093	-	7.093	-	-	-	-	-	-
2274: *Command & Control Warfare Sys*	64.761	14.252	8.592	22.372	-	22.372	-	-	-	-	-	-
2275: *Marine Corps Tactical Radio Systems*	99.784	11.334	14.469	15.065	-	15.065	-	-	-	-	-	-
2276: *Comms Switching and Control Sys*	48.130	1.710	4.749	1.536	-	1.536	-	-	-	-	-	-
2277: *System Engineering and Integration*	39.955	4.876	2.627	1.909	-	1.909	-	-	-	-	-	-
2278: *Air Defense Weapons System*	189.634	66.766	0.000	0.000	-	0.000	-	-	-	-	-	-
2510: *MAGTF CSSE & SE*	288.050	1.732	0.962	0.943	-	0.943	-	-	-	-	-	-
3099: *Radar System*	214.477	13.180	1.431	1.134	-	1.134	-	-	-	-	-	-
3772: *Information Related Capabilities (IRC)*	4.030	4.607	3.135	4.230	-	4.230	-	-	-	-	-	-
3773: *Fire Coordination and Sensors*	7.614	7.650	7.983	8.047	-	8.047	-	-	-	-	-	-
9999: *Congressional Adds*	0.000	12.540	0.000	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This program element provides funding to develop the command and control (C2) support and information infrastructures for the Fleet Marine Force and supporting establishment. Doctrinally, the C2 support system and the information infrastructure form two parts of a triad of capabilities which permits command and control systems to be transformed into a complete operating system. The third element of the triad is command and control organization and is not covered in this program element. USMC command and control is divided into seven functional areas and one supporting functional area as follows: intelligence C2, fire support C2, air operations C2, radio systems C2, combat service support C2, warfare C2, radar systems C2, and C2 support (information processing and communications).

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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Within this program element, subprojects have been grouped by C2 functional area for more efficient planning. Air defense weapons systems have been added to facilitate planning and a separate project is used for systems assigned to the supporting establishment. Subprojects which support the Commander's decision processes have been collected into the Command Post Systems project since these systems must work in close cooperation to ensure effective C2 of Marine Air Ground Task Forces.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	171.307	207.662	125.858	-	125.858
Current President's Budget	171.400	76.610	89.897	-	89.897
Total Adjustments	0.093	-131.052	-35.961	-	-35.961
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-131.052			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	6.192	0.000			
• SBIR/STTR Transfer	-6.100	0.000			
• Program Adjustments	0.000	0.000	26.692	-	26.692
• Rate/Misc Adjustments	0.001	0.000	-62.653	-	-62.653

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2020	FY 2021
Project: 9999: *Congressional Adds*		
Congressional Add: *Shipboard integration and AI networking/NOTM*	4.238	0.000
Congressional Add: *Multi function electronic warfare*	8.302	0.000
Congressional Add Subtotals for Project: 9999	12.540	0.000
Congressional Add Totals for all Projects	12.540	0.000

Change Summary Explanation

The net increase of $13.287M between FY 2021 and FY 2022 is primarily due to the following major program adjustment within the PE:

1) Command and Control Warfare System PU 2274 increasein FY 2022 reflects initiation of the following efforts: integration of common, open hardware backplane based off the C4ISR Modular Open Suites of Standards (CMOSS) and an open software architecture; development of networking capability for Dismounted and Team Portable systems to provide a high level of situational awareness to commanders and Marines at the company level and fully; the development of MEGFoS Dismounted Systems; integration of S&T efforts into MEGFoS; and initiation of MEGFoS dismounted development support.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 2270 / *Exp Indirect Fire Gen Supt Wpn Sys*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2270: *Exp Indirect Fire Gen Supt Wpn Sys*	332.939	27.664	25.978	27.568	-	27.568	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Resilient Expeditionary Positioning, Navigation and Timing (REPNT) (formerly MGUE-DAGR) - This is a top critical Marine Corps Force Design program. Program efforts are focused on increasing the resiliency and assurance of Positioning, Navigation, and Timing (PNT) capabilities across the enterprise, which enable Marine Air-Ground Task Force (MAGTF) Commanders to know and trust position, effectively navigate, and receive precise and accurate timing for users, platforms, and systems across warfighting functions. Current MGUE efforts will enable the Marine Corps to transition to the modernized military GPS signal (M-Code) through participation in both Space Force-led MGUE Increment I and Increment II programs. Increment I will deliver a receiver card capable of being embedded and integrated within a variety of USMC platforms and end items, while Increment II will deliver the next generation handheld device and will replace the Defense Advanced GPS Receiver (DAGR).

Marine Air-Ground Task Force (MAGTF) Command and Control (C2) Systems (MAGTF C2) - MAGTF C2 Tactical Service Oriented Architecture (TSOA) is an ACAT IV(M) program of record (POR) that is the Marine Corps' response to the Department of Defense (DoD) Net-Centric Services Strategy (NCSS). TSOA is a software only "IT-Box" program that was created in order to achieve agility and greater cost reduction across the USMC Command and Control (C2) Enterprise. This POR has been identified by the USMC Combat Development and Integration (CD&I) as the USMC's Service Oriented Infrastructure (SOI), which is equivalent to a Common Operating Environment (COE). The USMC seeks to rectify its current C2 architecture, which is composed of disparate and duplicative legacy systems through TSOA. TSOA will enable a collapse of this disparate C2 construct and create a Net-Centric environment where Marines employ user-centered applications that access required information across Authoritative Data Sources (ADS). This will be achieved through the CD&I-directed TSOA compliance effort in order to reduce duplicative product development and enable a divestiture of legacy disparate systems. This requires additional effort to ensure other ADSs are compliant with the TSOA product line.

TSOA's purpose is to ensure that Marines receive the right information, from trusted and accurate sources, when and where it is needed. This enables decisions "in context" for USMC operations across the Range of Military Operations and in support of the Unified Command Plan. TSOA's four capabilities include: Infrastructure and Services (I&S) which is the capability of authorized users to subscribe and publish required information from ADS with the use of software connectors; Agile Application Development (A2D) which is the capability to develop, accredit, and provide easy-to-learn, user-defined software applications that meet emergent Marine needs; Modular Software Architecture (MSA) which is virtualized, hardware agnostic, and scalable; Marine Corps Software Resource Center (MCSRC) is the Marine Corps' enterprise "App Store" for developed applications that allows Marines the ability to download, review, rate, and provide feedback.

Joint Battle Command - Platform (JBC-P) Family of Systems (FoS) - JBC-P FoS is an Army led ACAT II program of Joint Requirements Oversight Council (JROC) interest, formerly known as the Blue Force Tracker (BFT) FoS. It is comprised of L-Band SATCOM and is a digital, battle command information FoS that provides integrated, on the move, timely, relevant Command and Control Situational Awareness (C2SA) information to tactical combat, combat support and combat service support commanders, leaders, and key C2 nodes. JBC-P FoS will provide JROC mandated C2SA convergence across Combat Operations Centers (COC), ground vehicles and dismounted personnel.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2270 / *Exp Indirect Fire Gen Supt Wpn Sys*

Identity Dominance System - Marine Corps (IDS-MC) is a multi-modal (fingerprint, iris, and face) biometric collection system that provides the USMC a reliable and effective capability to collect, share, match, access, verify and store identity information. IDS-MC enables the Marine to collect appropriate biometric, biographical and reference information on an individual and match this locally developed information with pre-existing information available to the expeditionary force. The system displays match results with linkage to the respective individual's biographical and reference information as well as help analyze the response, update records as appropriate, create reports and disseminate updated information. The primary mission of IDS-MC is to provide the Marine Corps with the means to identify persons encountered in the battle space. While IDS-MC is not an intelligence analysis system, it does provide identification information in support of military intelligence by providing positive identification of persons of interest. IDS-MC is an enabler in the areas of detainee management and questioning, base access, counterintelligence screening, border control, displaced persons' management and aiding in humanitarian assistance missions. IDS-MC supports the tactical application of identity dominance and fully supports a forward presence, crisis response and contingency response capability.

Forensics Dominance System - Marine Corps (FDS-MC) (formerly Expeditionary Forensic Exploitation Capability (EFEC) is a multi-modal (fingerprint, DNA, document, cellular, media, chemical, and fire arm) forensic collection system that provides the United States Marine Corps (USMC) a reliable and effective capability to recognize, protect, collect, analyze, store and share forensic information. This organic Marine Corps forensic capability supports deployed Marine Forces with agile, ruggedized, and scalable expeditionary forensics that are compatible and fully integrated with joint, other service, and interagency laboratories, yet also tailored to the unique operating requirements of the maritime domain. Maritime applications include the ability to support Marine Expeditionary Units with an at sea forensic exploitation capability to conduct vessel boarding and ship search operations. FDS_MC supports the Information Environment through sensitive forensic testing and analysis that positively identifies personnel and trace chemicals/elements; forensically exploits document and media; and scientifically links identities and networks to places, events, and activities. FDS-MC provides a transformative capability that integrates Artificial Intelligence and Machine Learning to enable intelligence operations, force protection, intelligence, and targeting.

Handheld Command and Control (H2C2) - The H2C2 portfolio consists of two specific capabilities - secure wireless access to multiple networks and handheld communication platforms. The handheld capability provides low cost (commercially available) platforms (smartphones and tablets) for use on tactical networks, up to SECRET, regardless of the operational environment. The secure wireless capability enables Marines burdened by wired implementations an option to leverage wireless mediums. This capability provides wireless communication between a variety of devices.

Global Command and Control System Tactical Combat Operations (GCCS TCO) - The GCCS TCO program is the principal tool within the MAGTF for situational awareness through distribution of the Common Tactical Picture (CTP). It supports tactical operations providing information via high speed computer systems in a timely manner and includes the Tactical COP Workstation/Servers. RDT&E funding allows for developmental software development as the program of record changes from a client/server relationship to a cloud based enterprise solution.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: MAGTF C2: Product Development	10.213	12.189	11.889	0.000	11.889
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
FY 2021 Plans: - Continue harvesting cloud data which enables higher fidelity Machine Learning models. This will enable future Cognitive Assistants. - Continue MCSRC support for USCMC Common Handheld devices for lightweight applications. - Initiated the federation and data correlation services to support Common Operational Picture (COP)/Common Tactical Picture (CTP) across the Marine Air-Ground Task Force (MAGTF)/Joint Task Force (JTF). ***FY 2022 Base Plans:*** - Continue harvesting cloud data which enables higher fidelity Machine Learning models. This will enable future Cognitive Assistants. - Continue MCSRC support for USCMC Common Handheld devices for lightweight applications. - Continue improvements to the federation and data correlation services to support Common Operational Picture (COP)/Common Tactical Picture (CTP) across the Marine Air-Ground Task Force (MAGTF)/Joint Task Force (JTF). ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.300M from FY 2021 to FY 2022 is due to gained efficiencies in the development of the Service Oriented Architecture (SOI).					
Title: MAGTF C2: Support Costs	1.387	1.387	1.387	0.000	1.387
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue system engineering support for system integration, configuration management, and technical assessments of TSOA software products. ***FY 2022 Base Plans:*** - Continue system engineering support for system integration, configuration management, and technical assessments of TSOA software products. ***FY 2022 OCO Plans:*** N/A					
Title: MAGTF C2: Test and Evaluation	2.081	2.081	2.100	0.000	2.100

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue TSOA compliance testing with USMC tactical Data Systems (TDS). - Continue to participate in technical working groups in support of test and engineering. - Continue to provide technical assistance to other programs supported by Marine Corps Tactical Systems Support Activity (MCTSSA) that involve the use of these systems as well as through the Operating Forces Tactical Systems Support Center (OFTSSC) trouble calls. ***FY 2022 Base Plans:*** - Continue TSOA compliance testing with USMC tactical Data Systems (TDS). - Continue to participate in technical working groups in support of test and engineering. - Continue to provide technical assistance to other programs supported by Marine Corps Tactical Systems Support Activity (MCTSSA) that involve the use of these systems as well as through the Operating Forces Tactical Systems Support Center (OFTSSC) trouble calls. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.019M from FY 2021 to FY 2022 is due to an increase in compliance testing with TDS as the applications are updated to function more efficiently within the federated Service Oriented Architecture (SOI).					
Title: MAGTF C2: Management Services	1.296	1.296	1.296	0.000	1.296
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue to receive software engineering support to provide appropriate government direction in design and development of software, conduct of source code reviews, and prime vendor oversight from Federally Funded Research and Development Center (FFRDC). - Initiated the examination and prototyping of Artificial Intelligence (AI) applications for USMC tactical commanders. ***FY 2022 Base Plans:*** - Continue to receive software engineering support to provide appropriate government direction in design and development of software, conduct of source code reviews, and prime vendor oversight from Federally Funded Research and Development Center (FFRDC).					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue the examination and prototyping of Artificial Intelligence (AI) applications for USMC tactical commanders. ***FY 2022 OCO Plans:*** N/A					
Title: JBC-P: Test and Evaluation ***Articles:*** ***FY 2021 Plans:*** N/A ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:*** N/A	0.013 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: IDS-MC: Product Development ***Articles:*** ***FY 2021 Plans:*** - Conduct software enhancements to improve interoperability with data sharing. ***FY 2022 Base Plans:*** - Conduct software enhancements to collection device and transaction manager functionality. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** No significant change from FY 2021 to FY 2022.	0.000 -	0.450 -	0.483 -	0.000 -	0.483 -
Title: IDS-MC: Support ***Articles:*** ***FY 2021 Plans:*** - Continue software engineering support. - Continue laboratory integration to facilitate test and network integration cybersecurity updates, to include Technical Readiness Reviews and software patching.	0.761 -	0.568 -	0.371 -	0.000 -	0.371 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue and complete Market Research for IDS-MC Increment 3 technical refresh. ***FY 2022 Base Plans:*** - Continue software engineering support. - Continue laboratory integration, cybersecurity updates, technical Readiness reviews, and software patching. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.197M from FY 2021 to FY 2022 reflects completion of Market Research for IDS-MC Inc 3 technical refresh.					
Title: Forensics Dominance System - Marine Corps (FDS-MC) (formerly EFEC): Support ***Articles:*** ***FY 2021 Plans:*** - Initiate laboratory integration to facilitate test and network integration cybersecurity updates, to include Technical Readiness Reviews and software patching. ***FY 2022 Base Plans:*** - Continue laboratory integration to facilitate network connectivity, cybersecurity updates, Technical Readiness Reviews, and software patching. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** No significant change from FY 2021 to FY 2022.	0.000 -	0.200 -	0.206 -	0.000 -	0.206 -
Title: Forensics Dominance System - Marine Corps (FDS-MC) (formerly EFEC): Test and Evaluation ***Articles:*** ***FY 2021 Plans:*** - Initiate and complete User Evaluations of FDS-MC Market Research. ***FY 2022 Base Plans:*** - Initiate risk reduction prototyping with Commercial of the Shelf (COTS) forensic components. ***FY 2022 OCO Plans:***	0.736 -	0.180 -	0.086 -	0.000 -	0.086 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.094M from FY 2021 to FY 2022 reflects completion of market research user evaluations.					
Title: Forensics Dominance System - Marine Corps (FDS-MC) (formerly EFEC): Management Services	0.000	0.180	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: - Initiate and complete market research for FDS-MC Increment 2 technical refresh. ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.180M from FY 2021 to FY 2022 reflects completion of market research for FDS-MC Increment 2 technical refresh.					
Title: H2C2: Product Development	0.000	1.433	1.722	0.000	1.722
Articles:	-	-	-	-	-
FY 2021 Plans: - Initiated and developed cybersecurity and vulnerability patches for fielded MCH software. - Initiated software development to incorporate cybersecurity patches and software updates to improve interoperability with existing C2 Systems and peripheral devices as part of future Engineering Change Proposals (ECPs). ***FY 2022 Base Plans:*** -Continue to develop cybersecurity and vulnerability patches for fielded software. -Continue software development to incorporate cybersecurity patches and software updates to improve interoperability with existing C2 Systems and peripheral devices as part of future Engineering Change Proposals (ECPs). ***FY 2022 OCO Plans:***					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.289M from FY 2021 to FY 2022 is due to an increase in the number of expected ECPs to support interoperability with other tactical data systems, radios, and hardware.					
Title: H2C2: Support	5.527	1.100	1.278	0.000	1.278
Articles:	-	-	-	-	-
FY 2021 Plans: - Initiated integration of additional software applications into the H2C2 end user device hardware platform. - Continue integration of emerging capabilities across the H2C2 portfolio to include: MAGTF Common Handheld end user device, software application, peripheral equipment and integration with existing C2 programs of record. ***FY 2022 Base Plans:*** - Continue integration of additional software applications into the H2C2 end user device hardware platform. - Continue integration of emerging capabilities across the H2C2 portfolio to include: MAGTF Common Handheld (MCH) end user device, software application, peripheral equipment and integration with existing C2 programs of record. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.178M from FY 2021 to FY 2022 largely due to costs associated with H2C2 ECPs.					
Title: H2C2: Test and Evaluation	5.621	1.016	0.960	0.000	0.960
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue testing of cybersecurity and vulnerability patches for fielded software. - Complete MCH 1.1 Baseline. ***FY 2022 Base Plans:*** - Continue testing of cybersecurity and vulnerability patches for current MCH software. - Continue interoperability testing between follow on MCH software updates and other existing C2 systems. ***FY 2022 OCO Plans:***					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.056M from FY 2021 to FY 2022 largely due to completion of MCH 1.1 Baseline.					
Title: GCCS TCO: Product Development	0.029	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:*** N/A					
Title: Resilient Expeditionary Positioning, Nav, and Timing (REPNT) (formerly MGUE): Support	0.000	1.856	2.040	0.000	2.040
Articles:	-	-	-	-	-
FY 2021 Plans: - Initiate operation of the Positioning, Navigation, and Timing (PNT) systems integration lab (SIL) which is responsible for evaluating technologies to increase resiliency and assurance of PNT across the USMC enterprise. Funding supports efforts such as integration of MGUE Increment I Common GPS Modules (Receiver Cards) into a variety of Marine Corps platforms, and continued analysis of Increment II solutions. ***FY 2022 Base Plans:*** - Continue evaluation of technologies to increase resiliency and assurance of PNT across the USMC enterprise. - Continue integration support of MGUE receivers into Marine Corps priority platforms. - Conduct analysis of technologies for the Increment II handheld which will replace the DAGR. - Initiate liaison support between Space Force Space and Missile Center Production Corps Unit 1 (SMC PCU1) and Marine Corps PNT Program Office. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.184M from FY 2021 to FY 2022 reflects the transition of the funding source for the Positioning, Navigation, and Timing (PNT) systems integration lab (SIL) and SMC PCU1 liaison from Space Force to Marine					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Corps. Space Force has provided Other Customer Funds (OCF) since FY 2016 for the SMC PCU1 liaison and to establish and sustain the SIL until MGUE Increment I Operational Test in 3Q FY 2021. Beginning in FY 2022, Marine Corps is the sole funding source for the MGUE liaison and PNT SIL which will encompasses integration activities for both the Increment I mounted solution and the Increment II next generation handheld device.					
Title: Resilient Expeditionary Positioning, Nav, and Timing (REPNT) (formerly MGUE): Test and Evaluation ***Articles:*** ***FY 2021 Plans:*** - Initiate efforts to increase resiliency and assurance of PNT capabilities across the USMC enterprise via a multitude of material solutions to include ground platforms, aerial platforms, and handheld devices. Initial efforts will focus on transition to M Code capability. - Complete MGUE Increment I Field User Evaluation. ***FY 2022 Base Plans:*** - Continue efforts to increase resiliency and assurance of PNT capabilities across the USMC enterprise. - Conduct laboratory and field testing of Mounted PNT solutions during M-Code implementation on Marine Corps platforms. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $1.178M from FY 2021 to FY 2022 reflects completion of Military GPS User Equipment (MGUE) Increment I Joint Light Tactical Vehicle (JLTV) Field User Evaluation (FUE) and ramp up of M-Code integration testing in USMC priority platforms. The integration of MGUE M-Code capabilities is a Force Design initiative on track to deliver enhanced REPNT capabilities in line with Force Design Requirements.	0.000 -	1.872 -	3.050 -	0.000 -	3.050 -
Title: Resilient Expeditionary Positioning, Nav, and Timing (REPNT) (formerly MGUE): Management Services ***Articles:*** ***FY 2021 Plans:*** - Initiate MITRE engineering support to develop and update Positioning, Navigation, and Timing (PNT) technology road map and associated technical studies focused on increasing resiliency and assurance of PNT capabilities across the USMC enterprise. ***FY 2022 Base Plans:***	0.000 -	0.170 -	0.700 -	0.000 -	0.700 -

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue MITRE Engineering support to develop and update Positioning, Navigation, and Timing (PNT) road map and technical studies focused on increasing resiliency and assurance of PNT capabilities across the USMC enterprise. - Conduct research and development of technical strategies to ensure Navigation Warfare (NAVWAR) compliance during the Marine Corps' modernization to Mounted PNT capabilities. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.530M from FY 2021 to FY 2022 reflects MITRE Engineering services funding source transition from USSF SMC PCU1 to USMC REPNT.					
Accomplishments/Planned Programs Subtotals	27.664	25.978	27.568	0.000	27.568

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/4631/PE0206313M: *JBC-P*	3.370	0.000	0.000	-	0.000	-	-	-	-	-	-
• PMC/4652/PE0206315M: *IDS-MC*	4.945	1.006	0.167	-	0.167	-	-	-	-	-	-
• PMC/4631AA: *GCCS TCO*	1.409	0.753	0.096	-	0.096	-	-	-	-	-	-
• PMC/4631BB: *H2C2*	16.305	0.000	0.000	-	0.000	-	-	-	-	-	-
• PMC/4633/PE0206313M: *REPNT (formerly MGUE)*	3.500	0.150	31.480	-	31.480	-	-	-	-	-	-
• PMC/4652/PE0208018M: *FDS-MC (formerly EFEC)*	0.000	4.200	0.000	-	0.000	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

REPNT (formerly MGUE-DAGR): As the commodities management office, the Marine Corps program office will continue to leverage efforts conducted within the joint environment to assist in informing and implementing the enterprise positioning, navigation, and timing strategy for the Marine Corps. The program office will seek out opportunities to maximize the use of COTS/NDI products in its approach, while identifying opportunities for integration of emerging technologies across a variety of ground platforms.

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MAGTF C2 (TSOA): TSOA program office has developed its Acquisition Strategy/Acquisition Plan (ASAP) to define the TSOA operational mission, business strategy and the detailed acquisition approach relative to cost, schedule and performance drivers. The TSOA program is being developed and managed using an "IT-Box" construct that supports agile development and requirements oversight for information systems." Requirements for TSOA are described in three key documents: the Information System Initial Capabilities Document (IS-ICD), the Requirements Definition Package (RDP), and the Capability Drop (CD).

JBC-P: JBC-P FoS is leveraging the Army's development of the JBC-P. The Marine Corps program is contingent upon the Army's development and acquisition strategy. The Army will fund research and development for JBC-P unless there are Service unique requirements, which the Marine Corps program office will fund. The increase of funding in FY 2022 is due to the Marine Corps concerted effort to modernize in accordance with the National Defense Strategy (NDS)/Defense Planning Guidance (DPG).

IDS-MC: The IDS-MC Inc 2 acquisition strategy involved significant market research during FY 2017 and determined that IDS-MC Inc 2 system could be purchased as a COTS system after software modification and customization to meet unique Marine Corps needs. Due to the market research findings, the Program Office pursued a DoD Rapid Innovation Funding (RIF), Broad Agency Announcement (BAA) for IDS-MC Inc 2 prototyping, to provide a complete prototype identity operations system. To maintain schedule and as risk reduction effort, the Program Office also assessed a second system prototype delivered through an Air Force Research Laboratory (AFRL) Other Transaction Authority (OTA). Upon completion of the above evaluations, the Program Office obtained a successful Milestone C/Full Rate Production (FRP) decision for IDS-MC Inc 2. The Program Office utilized a Justification and Approval to move into a traditional Federal Acquisition Regulations (FAR) based acquisition for both Low-Rate Initial Production (LRIP) and FRP.

FDS-MC (formerly EFEC): The FDS-MC acquisition strategy is evolutionary, structured to deliver capabilities incrementally, recognizing the need for future capability improvements. This allows the current capability to be utilized in the field without interruption, while implementing updated components and improved technologies as they evolve. The FDS-MC acquisition strategy leverages market research, user feedback, and technology exploration to deliver a streamlined, efficient capability that can be easily sustainable by the Marine Corps going forward.

H2C2: H2C2 will use an evolutionary approach for technology insertion. The approach will leverage and mature COTS and NDI technologies to rapidly transition a handheld data capability to other acquisition programs. H2C2 inserts mature technology into existing programs in order to fill capability gaps and requirement shortfalls. These technologies will be inserted at different times along gaining program acquisition cycles. This strategy will apply to available technology at different proposed technology insertion points for each gaining program. Additionally, H2C2 has been tasked to develop a solution that meets the JBC-P dismounted requirements and requires C2SA interoperability with existing C2 programs of record. The current iteration of MCH provides a dismounted C2SA capability at the squad level via a tethered connection to tactical radios. Future iterations will incorporate enhanced software and hardware capabilities based on technological maturity over time in accordance with the evolutionary development approach.

GCCS TCO: The Program is managed by Marine Corps System Command (MCSC) internal program management, engineering, logistics and financial support. Hardware acquisition is accomplished by using MCSC Marine Corps Common Hardware Suite (MCHS) and a combination of MCHS and MCSC Command and Control Systems (C2S) contracting. Software acquisition, integration and support is provided using Space and Naval Information Warfare Atlantic (NIWC-A) program reutilizes

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Joint Staff, Defense Information Systems Agency (DISA) provided software for its functional and capability requirements and Marine Corps specific hardware for its hardware solution.

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MAGTF C2 Product Development	C/CPFF	NIWC-LANT : Charleston, SC	58.650	2.495	Aug 2020	2.915	Apr 2021	2.889	Apr 2022	-		2.889	-	-	-
MAGTF C2	C/CPFF	NIWC-PAC : San Diego, CA	8.555	2.000	May 2020	3.174	May 2021	3.000	May 2022	-		3.000	-	-	-
MAGTF C2	WR	NIWC-LANT : Charleston, SC	11.532	1.004	Feb 2020	1.200	Feb 2021	0.000		-		0.000	-	-	-
MAGTF C2	WR	NRL : Washington, DC	2.483	0.864	Jun 2020	0.900	Mar 2021	1.500	Mar 2022	-		1.500	-	-	-
MAGTF C2	C/CPFF	ARL : Penn State, PA	0.600	0.600	Apr 2020	0.000		1.500	Apr 2022	-		1.500	-	-	-
MAGTF C2	C/CPFF	NG : San Diego, CA	1.600	3.250	Dec 2019	4.000	Dec 2020	3.000	Feb 2022	-		3.000	-	-	-
IDS-MC	C/CPFF	MCSC : Quantico, VA	0.000	0.000		0.119	May 2021	0.142	May 2022	-		0.142	-	-	-
IDS-MC	C/FFP	AFRL/RI : Fairborn, OH	0.000	0.000		0.331	May 2021	0.341	Feb 2022	-		0.341	-	-	-
H2C2	WR	DPSS : China Lake, CA	0.000	0.000		1.433	Nov 2020	1.722	Nov 2021	-		1.722	-	-	-
GCCS TCO	C/CPFF	NIWC-LANT : Charleston, SC	0.000	0.029	May 2020	0.000		0.000		-		0.000	-	-	-
Prior Years Cumulative Funding	Various	Various : Various	170.370	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	253.790	10.242		14.072		14.094		-		14.094	-	-	N/A

Remarks

No significant change from FY21 to FY22.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MAGTF C2	WR	NIWC-P : San Diego, CA	8.479	1.387	Feb 2020	1.387	Feb 2021	1.387	Feb 2022	-		1.387	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
IDS-MC	WR	NIWC LANT : Charleston, SC	1.163	0.762	Mar 2020	0.413	Dec 2020	0.035	Dec 2021	-		0.035	-	-	-
IDS-MC	C/FFP	AFRL/RI : Fairborn, OH	0.000	0.000		0.155	May 2021	0.336	Feb 2022	-		0.336	-	-	-
FDS-MC	WR	NIWC LANT : Charleston, SC	0.000	0.000		0.066	Dec 2020	0.051	Dec 2021	-		0.051	-	-	-
FDS-MC	C/FFP	AFRL/RI : Fairborn, OH	0.000	0.000		0.134	May 2021	0.155	Feb 2022	-		0.155	-	-	-
H2C2 Integration Eng	WR	NIWC LANT : Charleston, SC	4.041	1.053	Dec 2019	0.220	Dec 2020	0.100	Dec 2021	-		0.100	-	-	-
H2C2 Integration Eng	C/FFP	NIWC LANT : Charleston, SC	1.538	0.578	Dec 2019	0.440	Dec 2020	0.000		-		0.000	-	-	-
H2C2 Integration Eng	WR	NSWC Crane : Crane, IN	2.359	0.731	Nov 2019	0.440	Dec 2020	0.000		-		0.000	-	-	-
H2C2 Integration Eng	WR	NSWC China Lake : China Lake, CA	3.116	2.021	Jul 2020	0.000		0.678	Dec 2021	-		0.678	-	-	-
H2C2 Integration Eng	Various	MCSC : Quantico, VA	0.000	0.844	Apr 2020	0.000		0.200	Dec 2021	-		0.200	-	-	-
H2C2 Integration Eng	C/FFP	NSWC Crane2 : Crane, IN	0.060	0.300	Oct 2019	0.000		0.000		-		0.000	-	-	-
H2C2 Integration Eng	PO	MCTSSA : Camp Pendleton, CA	0.000	0.000		0.000		0.300	Dec 2021	-		0.300	-	-	-
REPNT	WR	NIWC LANT : Charleston, SC	0.000	0.000		1.856	Feb 2021	1.490	Oct 2021	-		1.490	-	-	-
REPNT	WR	NSWC Corona : Norco, CA	0.000	0.000		0.000		0.550	Oct 2021	-		0.550	-	-	-
Prior Years Cumulative Funding	Various	Various : Various	2.292	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	23.048	7.676		5.111		5.282		-		5.282	-	-	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Increase of $0.171M from FY 2021 to FY 2022 reflects the transition of the funding source for the Positioning, Navigation, and Timing (PNT) systems integration lab (SIL) and SMC PCU1 liaison from Space Force to Marine Corps. Space Force has provided Other Customer Funds (OCF) since FY 2016 for the SMC PCU1 liaison and to establish and sustain the SIL until MGUE Increment I Operational Test in 3Q FY 2021. Marine Corps is the sole funding source for the liaison and SIL beginning in FY 2022.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MAGTF C2	C/ FFPLOE	MCTSSA : Camp Pendleton, CA	5.369	2.081	Apr 2020	2.081	Apr 2021	2.100	Apr 2022	-		2.100	-	-	-
FDS-MC	WR	NIWC LANT : Charleston, SC	0.384	0.736	Nov 2019	0.046	Nov 2020	0.043	Nov 2021	-		0.043	-	-	-
FDS-MC	C/FFP	AFRL/RI : Fairborn, OH	0.000	0.000		0.134	May 2021	0.043	Feb 2022	-		0.043	-	-	-
H2C2	WR	NIWC LANT : Charleston, SC	1.762	2.282	Dec 2019	0.151	Dec 2020	0.100	Dec 2021	-		0.100	-	-	-
H2C2	WR	MCOTEA : Quantico, VA	0.000	1.785	Dec 2019	0.400	Dec 2020	0.000		-		0.000	-	-	-
H2C2	C/FFP	NIWC/LANT : Charleston, SC	0.858	0.500	Dec 2019	0.225	Dec 2020	0.100	Dec 2021	-		0.100	-	-	-
H2C2	C/FFP	MCTSSA : Camp Pendleton, CA	0.690	1.054	Dec 2019	0.240	Mar 2021	0.760	Dec 2021	-		0.760	-	-	-
REPNT Test & Eval	WR	NIWC LANT : Charleston, SC	0.000	0.000		0.000		1.050	Dec 2021	-		1.050	-	-	-
REPNT	C/CPFF	NIWC LANT : Charleston, SC	0.000	0.000		1.872	Feb 2021	2.000	Feb 2022	-		2.000	-	-	-
JBCP	WR	MCSC : Quantico,VA	0.000	0.012	Aug 2020	0.000		0.000		-		0.000	-	-	-
Prior Years Cumulative Funding	Various	Various : Various	32.273	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	41.336	8.450		5.149		6.196		-		6.196	-	-	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Increase of $1.047M from FY 2021 to FY 2022 is largely due to REPNT completion of Military GPS User Equipment (MGUE) Increment I Joint Light Tactical Vehicle (JLTV) Field User Evaluation (FUE) and ramp up of M-Code integration testing in USMC priority platforms.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MAGTF C2	C/CPFF	CECOM/MITRE : Ft. Monmouth, NJ	10.124	1.296	Jun 2020	1.296	Jun 2021	1.296	Jun 2022	-		1.296	-	-	-
FDS-MC	C/CPFF	CECOM/MITRE : Ft. Monmouth, NJ	0.000	0.000		0.180	Jan 2021	0.000		-		0.000	-	-	-
REPNT	C/CPFF	CECOM/MITRE : Ft. Monmouth, NJ	0.000	0.000		0.170	Feb 2021	0.700	Feb 2022	-		0.700	-	-	-
Prior Years Cumulative Funding	Various	Various : Various	4.641	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	14.765	1.296		1.646		1.996		-		1.996	-	-	N/A

Remarks

Increase of $0.350M from FY 2021 to FY 2022 largely due to ramp up of REPNT MITRE support.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	332.939	27.664		25.978		27.568		-		27.568	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
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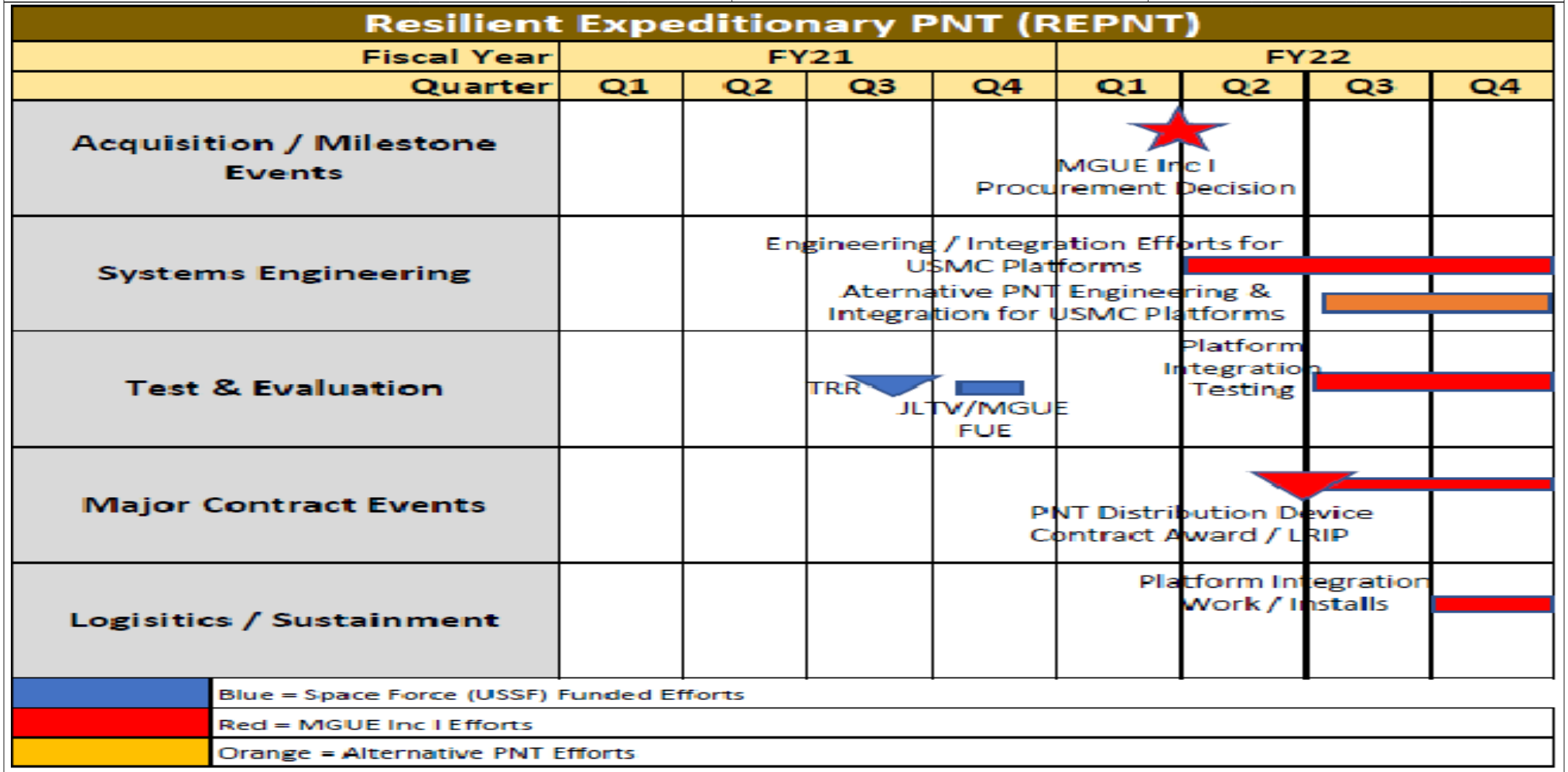

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
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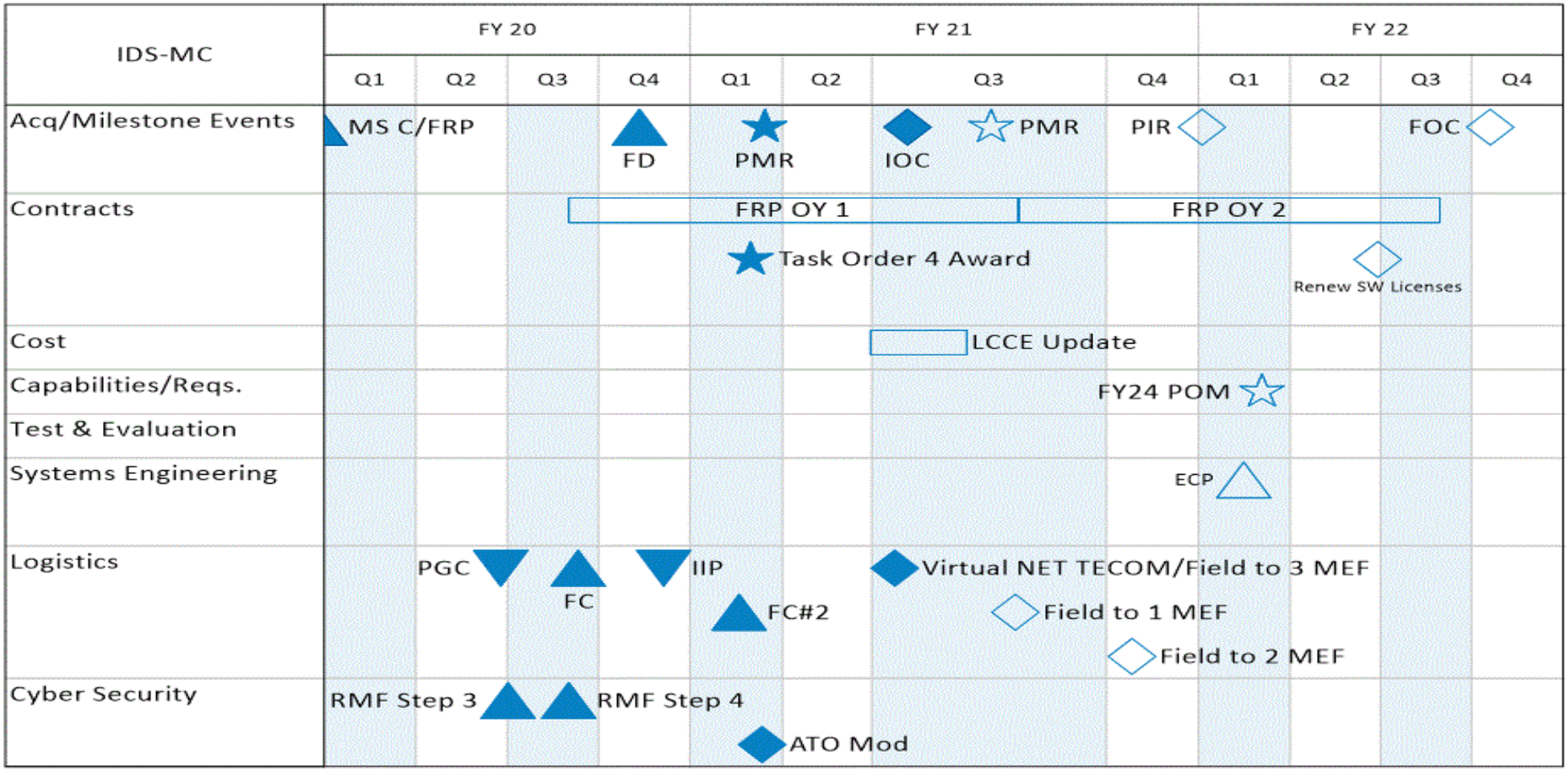

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
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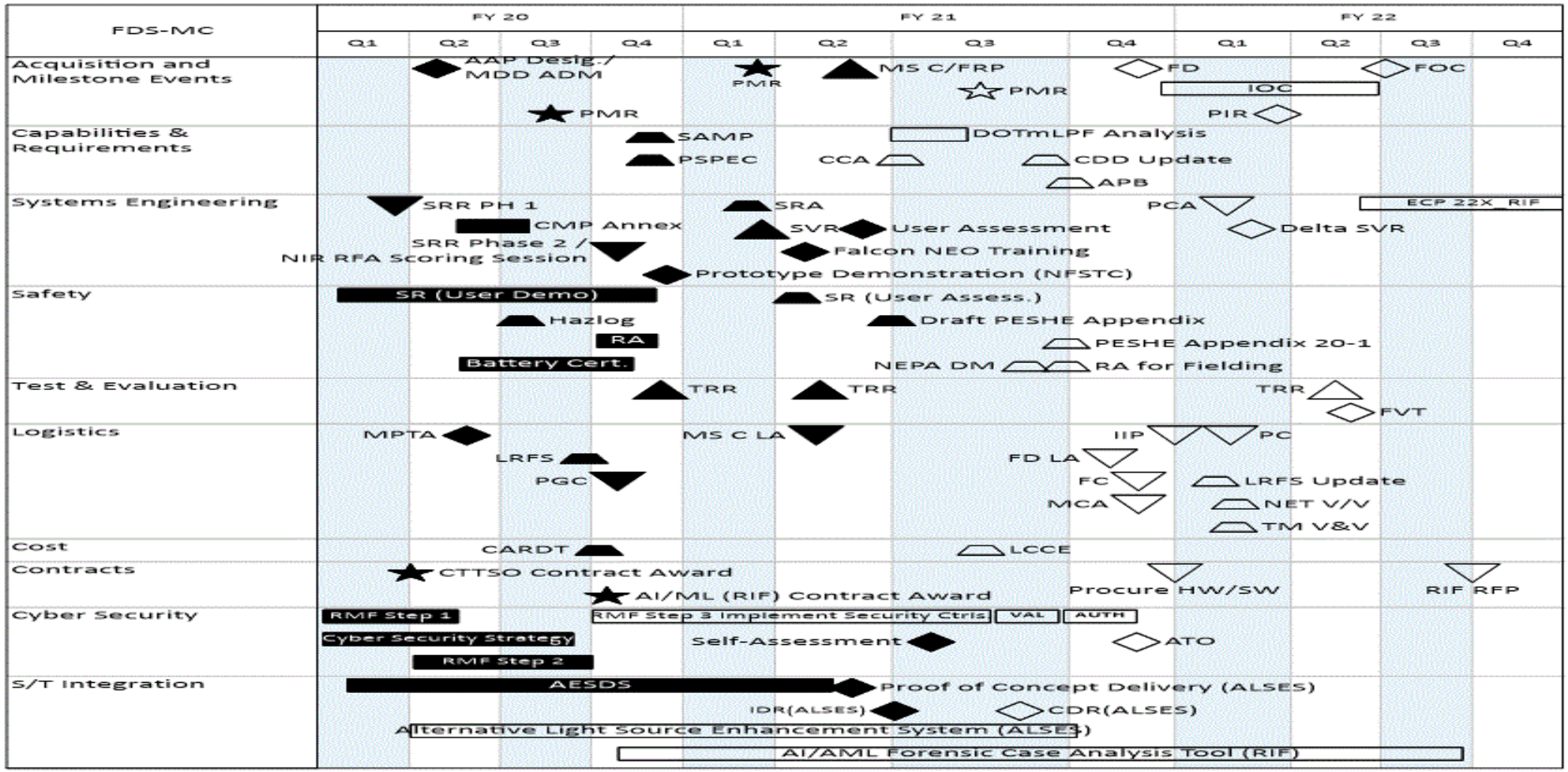

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
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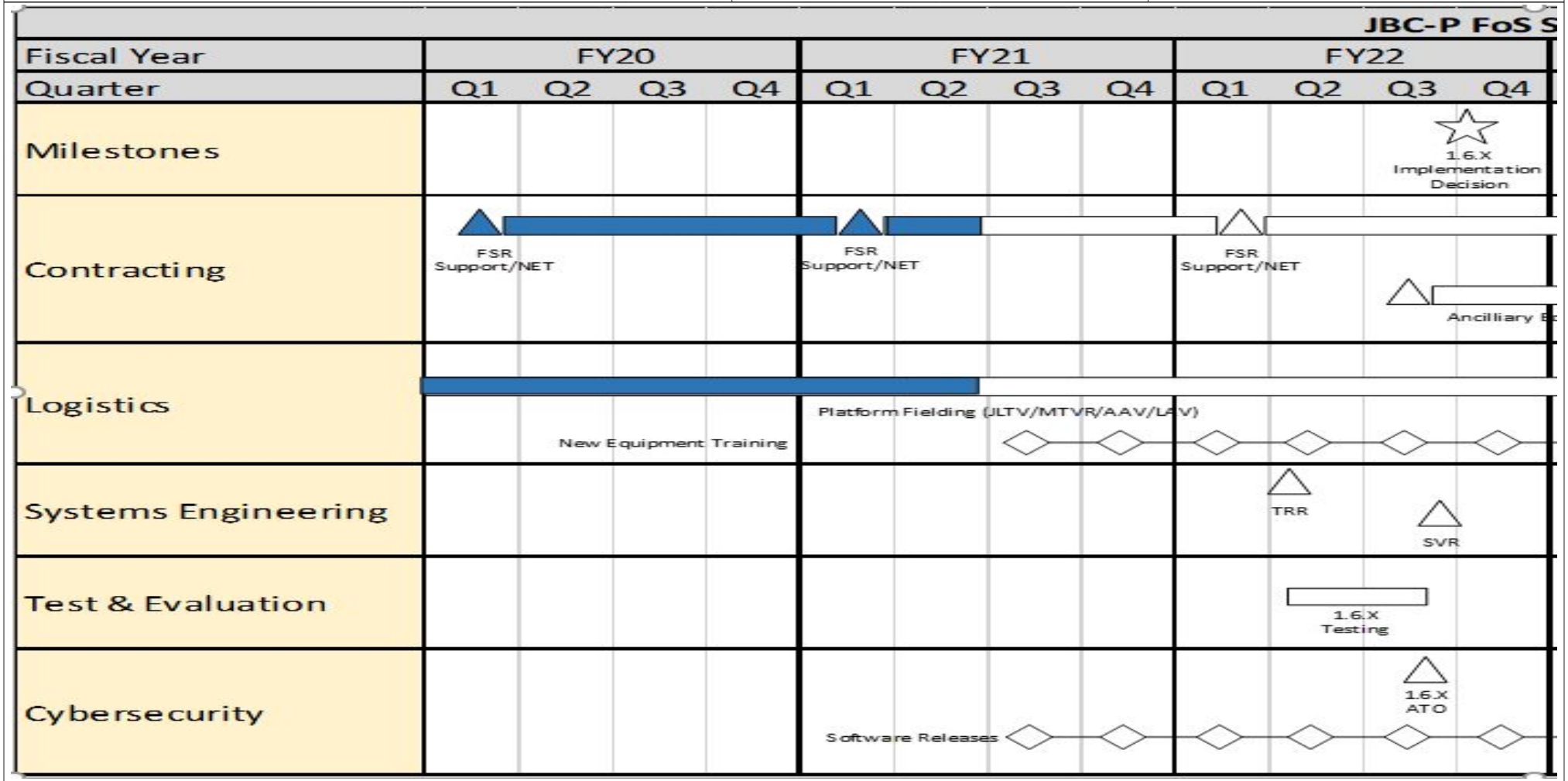

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
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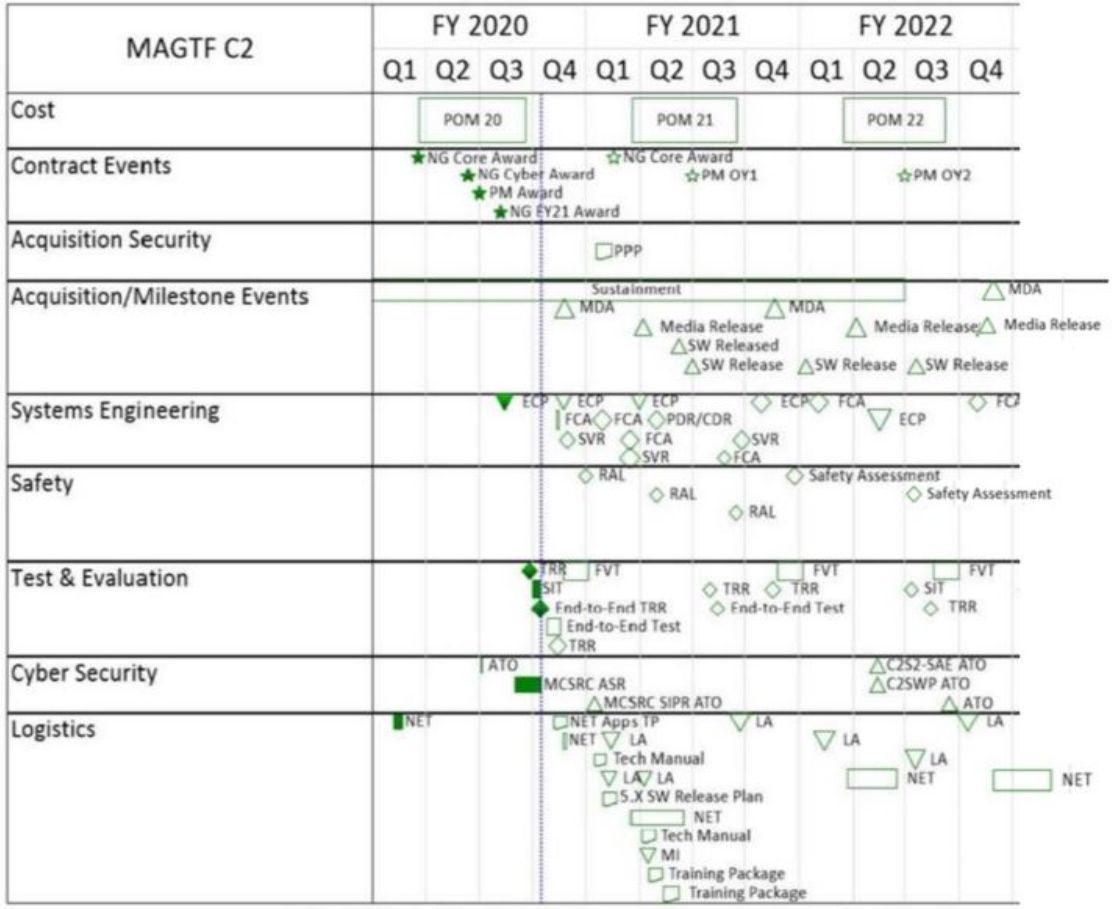

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
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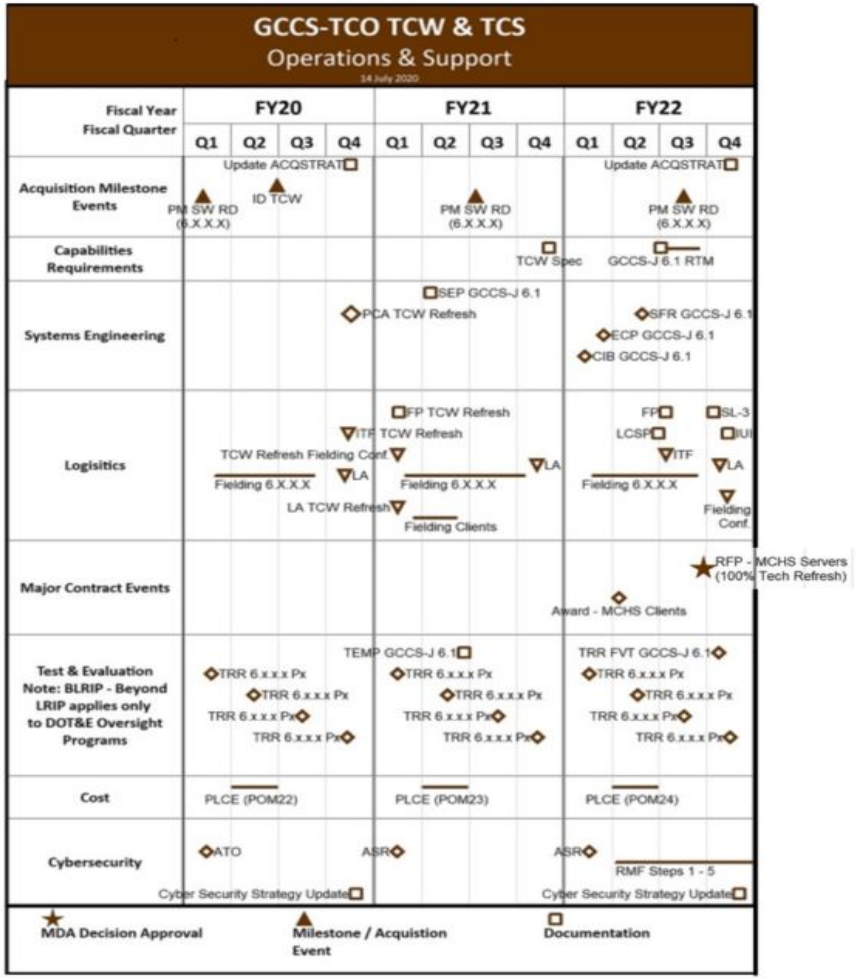

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
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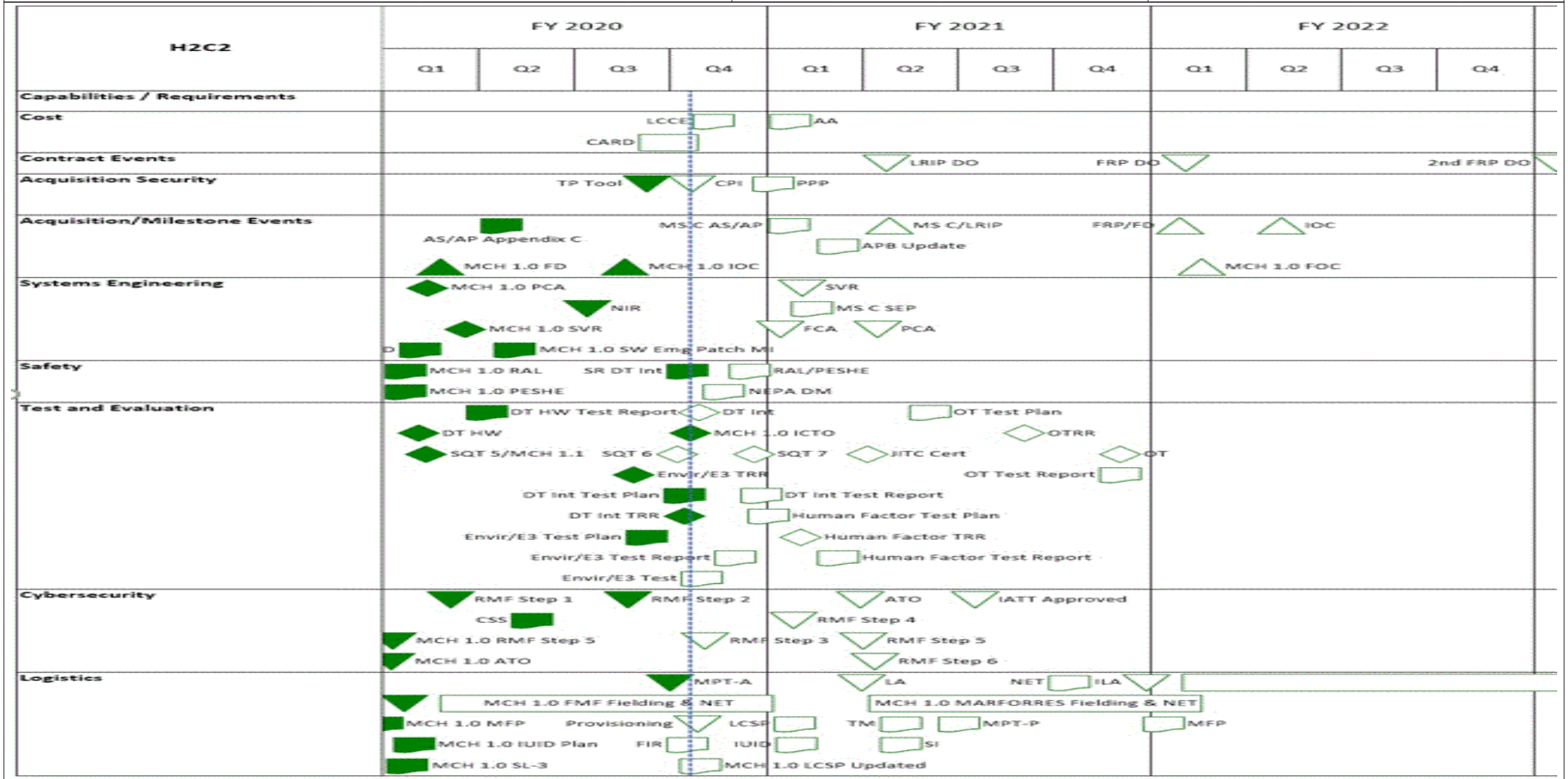

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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2270				
MAGTF C2 ECP FY20	3	2020	3	2020
MAGTF C2 TRR	3	2020	3	2020
MAGTF C2 SVR	4	2020	4	2020
MAGTF C2 Software Sustainment Award FY21	1	2021	1	2021
MAGTF C2 ECP FY21	2	2021	2	2021
MAGTF C2 TRR FY21	3	2021	3	2021
MAGTF C2 SVR FY21	3	2021	3	2021
MAGTF C2 Security ECP FY21	4	2021	4	2021
MAGTF C2 Software Release	1	2022	1	2022
MAGTF C2 ECP FY22	2	2022	2	2022
MAGTF C2 SIT FY22	3	2022	3	2022
MAGTF C2 Safety Assessment	3	2022	3	2022
MAGTF C2 FCA	4	2022	4	2022
MAGTF C2 Media Release	4	2022	4	2022
IDS-MC Inc 2 Fielding Decision	4	2020	4	2020
IDS-MC Inc 2 Fielding	2	2021	4	2021
FDS-MC MDD	2	2020	2	2020
FDS-MC MS C	2	2021	2	2021
FDS-MC FOC	2	2022	2	2022
H2C2 MS C	2	2021	2	2021
H2C2 IOC	2	2022	2	2022

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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GCCS TCO PM SW RD (6.X.X.X)	1	2020	1	2020
GCCS TCO Fielding 6.X.X.X	1	2020	3	2020
GCCS TCO PCA TCW Refresh	4	2020	4	2020
GCCS TCO TRR 6.x.x.xPx	1	2021	1	2021
GCCS TCO SEP GCCS-J 6.1	2	2021	2	2021
GCCS TCO PM SW RD (6.X.X.X) FY21	3	2021	3	2021
GCCS TCO ECP GCCS-J 6.1	1	2022	1	2022
GCCS TCO SFR GCCS-J 6.1	2	2022	2	2022
GCCS TCO PM SW RD (6.X.X.X) FY22	3	2022	3	2022
MGUE Increment 1 Procurement Decision	1	2022	1	2022
MGUE Contract Award	2	2022	2	2022

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COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2273: *Air Ops Cmd & Control (C2) Sys*	454.760	5.089	6.684	7.093	-	7.093	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Composite Tracking Network (CTN) - The Composite Tracking Network (CTN) is a Commandant of the Marine Corps (CMC) Force Design (FD) program which distributes composite tracking data to Command and Control (C2) and weapon systems participating in the US Navy's Cooperative Engagement Capability (CEC) network, which is a sensor network with integrated fire control capability that improves battle force air and missile defense capabilities by combining data from multiple battle force air search sensors on CEC-equipped units into a single, real-time, composite track picture. CTN greatly enhances fleet air defense working in concert with CEC by significantly contributing to real-time situational awareness. The program received ACAT III designation in Nov 2001 and is an instantiation of the USN CEC Program. The program is USMC led with US Navy and US Army cooperation. The 12 April 1995 Mission Need Statement (MNS) No. AAS 48 for the Common Aviation Command and Control System (CAC2S) established the Marine Corps' need to upgrade its existing air defense architecture with capabilities to support improved situational awareness (SA) and advanced engagement concepts. The Composite Tracking Network (CTN) program was initiated to address this capability gap. The CTN system (AN/MSQ-143A(V)1) is an integration effort consisting of an AN/USG-4B (the USMC CEC CTN platform) and other US Marine-unique components. The CTN system interfaces with the AN/TPS-80 Ground/Air Task Oriented Radar (G/ATOR) and the Common Aviation Command and Control System (CAC2S) to provide the Marine Air-Ground Task Force (MAGTF) and Joint Task Force Commanders a real-time, line of sight, high data-rate sensor and engagement data distribution network that combines all distributed sensor data, including G/ATOR measurements, into a fire control quality track picture which is the same for all CEC network nodes. CEC data combined with G/ATOR contributions, will effectively increase Situational Awareness by providing accurate, composite, and real-time surveillance tracks, reduce ground-to-air and air-to-air fratricide, enable air and surface Naval Integrated Fire Control-Counter Air (NIFC-CA), and extend the air defensive capability of forces in the littorals. Through integration & fielding of CEC Increment II capabilities, CTN shall integrate new sensor types and track data sources into the network, such as surface search radars and passive detection sensors, as well as relevant data from other networks. CTN shall accommodate more CUs and provide a more complete, robust, and resilient situational awareness picture, composite identification, and Integrated Fire Control (IFC), with assured communications for Integrated Air and Missile Defense (IAMD), surface warfare, and electronic mission warfare domains.

Air Battle Management (ABM) - ABM is a Commandant of the Marine Corps (CMC) Force Design (FD) program which contains the Theater Battle Management Core Systems-Marine Corps (TBMCS-MC). TBMCS-MC is the joint mandated air war planning tool for generation, dissemination, and execution of Air Tasking Orders (ATO) and Airspace Control Orders (ACO). TBMCS-MC is a core C2 system in the Marine aviation combat element for the tools required to conduct Situational Awareness and Assessment, Airspace De-confliction, Mission Planning/Execution/Re-planning, and Assault Support Processing. The Marine Corps derives, develops, and sustains the core TBMCS software suite in joint cooperation with the United States Air Force (USAF) and maintains its configuration of TBMCS-MC while continually improving its cybersecurity posture in accordance with relevant DoD and Marine Corps requirements and timelines. The Marine Corps maintains the responsibility to ensure the system meets Marine air C2 requirements and its operational relevant employment in a joint theater of operations while maintain interoperability with numerous Joint, Marine Corps, Navy and Air Force command and control systems.

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Remote Video Viewing Terminal (RVVT) - Consists of Commercial Off-The-Shelf (COTS) Video Down-Link (VDL) products such as the VideoScout Mobile Configuration 2 (VS-MC/2), VideoScout Mobile Configuration 3 (VS-MC/3), and Man Portable Video Down-Link (MPVDL) that allow for the viewing and exploitation of Full Motion Video (FMV) from Intelligence, Surveillance and Reconnaissance (ISR) assets. VDL systems are mission critical for coordination of direct and indirect fires and the prevention of fratricide. These systems provide the Fleet Marine Forces with critical video and metadata from all USMC manned and unmanned aircraft to include, but not limited to Raven B, Puma, Micro-UAS, Shadow, Predator, Fire Scout, and Litening Pod on P-3, AV8-B, F/A-18, and F35. These products ensure critical data is displayed to Forward Air Controllers (FACs), Forward Observers (FOs), Fire Support Teams (FSTs), Firepower Control Teams (FCTs), Tactical Air Control Parties (TACPs) and Reconnaissance Teams.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Composite Tracking Network (CTN): Support and Management Services	0.214	0.352	0.015	0.000	0.015
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue systems engineering efforts and updates to the software baseline to support annual CEC FQTs and IV&Vs, maintain cybersecurity updates and its Authority to Operate. - Continue travel, engineering support, and test support for Naval Integrated Fire Control-Counter Air (NIFC-CA) Integration and Orange Flag 20.3 test event. NIFC-CA joint testing with the US Navy's CEC is vital to extending the air defense capability of forces in the littorals.					
FY 2022 Base Plans: - Travel, engineering support, and test support for Naval Integrated Fire Control-Counter Air (NIFC-CA) Integration and Signal Data Processor (SDP) Next qualification testing. This is to support the development and testing of capabilities and components required to remain aligned with the US Navy's CEC Increment II capability upgrades.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: The $0.337M funding decrease from FY 2021 to FY 2022 is due to reduced travel necessary for NIFC-CA integration development.					
Title: Composite Tracking Network (CTN): Engineering Development	0.742	0.400	0.303	0.000	0.303
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue software certification to maintain interoperability with the Cooperative Engagement Capability (CEC) Network to include associated engineering support.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Initiate engineering support for CTN Software Development and Integration and certification efforts required to support the development of the Naval Integrated Fire Control-Counter Air (NIFC-CA). CTN is the USMC gateway to NIFC-CA via its interface with CEC and is vital to extending the air defense capability of forces in the littorals. ***FY 2022 Base Plans:*** - Continue software certification to maintain interoperability with CEC Network to include associated engineering support. - Continue engineering support for CTN Software Development and Integration and certification efforts required to support the development of NIFC-CA. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The $0.097M funding decrease from FY 2021 to FY 2022 is due to the reduction of scope for NIFC-CA integration development and transitioning to developmental testing.					
Title: Composite Tracking Network (CTN): Developmental Testing and Cyber Security	0.655	1.797	2.177	0.000	2.177
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue systems engineering efforts and updates to the software baseline to support annual Cooperative Engagement Capability (CEC) Formal Qualification Test (FQT), maintain cybersecurity updates and its Authority to Operate. - Initiate Naval Integrated Fire Control-Counter Air (NIFC-CA) system verification testing with Cooperative Engagement Capability (CEC) Network. CTN is the USMC gateway to NIFC-CA via its interface with CEC and this testing is vital to extending the air defense capability of forces in the littorals. - Conduct CTN Technology Refresh (TR) Field User Evaluation (FUE) test events. The CTN TR will maintain its current CEC interoperability and enable CTN to remain aligned with the development of US Navy CEC Increment II upgrade. ***FY 2022 Base Plans:*** - Continue systems engineering efforts and updates to the software baseline to support annual CEC FQT, maintain cybersecurity updates and its Authority to Operate. - Continue NIFC-CA system verification testing with Cooperative Engagement Capability (CEC) Network.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Initiate Signal Data Processor (SDP) Next qualification testing with the CEC Network. This is the next generation component which is to replace the current SDP-Sierra (SDP-S). This upgrade is required to remain aligned with the US Navy's CEC Increment II capabilities. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The $0.380M funding increase from FY 2021 to FY 2022 is to support the qualification testing for the next generation Signal Data Processor (SDP).					
Title: Remote Video Viewing Terminal (RVVT): Software Development Support	0.842	0.205	1.328	0.000	1.328
Articles:	-	-	-	-	-
FY 2021 Plans: - Continued software development for the integration of encrypted video with new and fielded sensor platforms. - Completed software development for hand off system viewing features. ***FY 2022 Base Plans:*** - Continue software development for the integration of encrypted video with new and fielded sensor platforms, to include 5th generation sensor and air platform. - Integrate Full Motion Video into the Marine Corp Situational Awareness Tablets. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The net increase of $1.123M from FY 2021 to FY 2022 is required for the integration of encrypted Full Motion Video into the Marine Corps Situational Awareness Tablets. This new capability will provide critical data to Fleet Marine Forces forces requiring access to airborne ISR for situational awareness and targeting.					
Title: Air Battle Management (ABM): Managment Services	0.256	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A ***FY 2022 Base Plans:***					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A ***FY 2022 OCO Plans:*** N/A					
Title: Air Battle Management (ABM): Engineering Support ***Articles:*** ***FY 2021 Plans:*** - Complete critical analysis efforts with the TBMCS-MC Next Generation Suite applications in support of operational test and evaluation, USMC led developmental test (DT). - Initiate engineering support for system integration development of the TBMCS-MC Next Generation Suite. ***FY 2022 Base Plans:*** - Continue engineering support for system integration development of the TBMCS-MC and its tech refresh. This is an effort to upgrade the TBMCS-MC until the replacement system is fielded. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The $0.117M funding decrease from FY 2021 to FY 2022 is due to completion of critical analysis efforts associated with the TBMCS-MC Next Generation Suite operational and developmental testing.	0.115 -	0.792 -	0.675 -	0.000 -	0.675 -
Title: Air Battle Management (ABM): Test and Evaluation ***Articles:*** ***FY 2021 Plans:*** - Initiate development and T&E of Air Force TBMCS modules to meet Marine Corps capability requirements. - Conduct the development of TBMCS-MC Next Generation Suite Integrated Logistics Activities (ILA) in concert with the Air Force. - Continue information assurance (IA) testing on developmental software to meet cyber security posture and conduct risk reduction testing to identify potential software vulnerabilities. - Continue Marine Corps participation in Air Force-led TBMCS replacement developmental events. ***FY 2022 Base Plans:*** - Continue development and T&E of Air Force KRADOS modules to meet Marine Corps TBMCS-MC Next Generation Suite capability requirements.	1.646 -	2.449 -	1.495 -	0.000 -	1.495 -

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue IA testing on developmental software to meet cyber security posture and conduct risk reduction testing to identify potential software vulnerabilities. - Continue Marine Corps participation in Air Force-led KRADOS developmental events. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The $0.954M funding decrease from FY 2021 to FY 2022 is due to the completion of TBMCS-MC Next Generation Suite ILA integration with the Air Force and a reduction of required scope of IA testing.					
Title: Air Battle Management (ABM): Product Development ***Articles:*** ***FY 2021 Plans:*** - Initiate the USMC build of the TBMCS-MC Replacement Production Representative System (PRS). ***FY 2022 Base Plans:*** - Continue TBMCS-MC replacement PRS development. - Initiate the integration development of the TBMCS-MC replacement PRS. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The $0.411M funding increase from FY 2021 to FY 2022 is to support the integration development of the TBMCS-MC replacement PRS.	0.000 -	0.689 -	1.100 -	0.000 -	1.100 -
Title: Air Battle Management (ABM): Legacy TBMCS-MC Software Development Support ***Articles:*** ***FY 2021 Plans:*** N/A ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:***	0.619 -	0.000 -	0.000 -	0.000 -	0.000 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A					
Accomplishments/Planned Programs Subtotals	5.089	6.684	7.093	0.000	7.093

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/4640/CT: *Composite Tracking Network (CTN)*	5.370	6.931	0.000	-	0.000	-	-	-	-	-	-
• PMC/4640/DX: *Air Battle Management (ABM)*	6.164	1.290	1.204	-	1.204	-	-	-	-	-	-
• PMC/464023: *RVVT*	5.874	0.020	0.090	-	0.090	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

ABM - The Marine Corps continues to sustain unique requirements in addition to Air Force requirements and deviates from the Air Force-developed TBMCS-Force Level configuration as necessary to sustain its TBMCS-MC. The USMC separately manages the development and fielding of software and hardware engineering change proposals for Information Assurance (IA) and functionality updates to ensure daily direct support of the Air Battle Plan in joint theaters of operation. The Marine Corps prevents TBMCS-MC obsolescence through cyclic and as-needed technical refreshment of information technology hardware when applicable. The USD (AT&L) canceled the US Air Force's Air Operations Center - Weapon System (AOC-WS) 10.2 program in 2018 that included the Command and Control (C2) Air Operations Suite - C2 Information Services (C2AOS-C2IS), therefore Air Force Program Executive Officer (PEO) Digital subsequently transitioned its efforts to a middle tier of acquisition (MTA) (Section 804 of the FY 2016 NDAA) rapid prototyping effort under the AOC-WS Modifications "Block 20" program. AOC-WS "Block 20" capabilities are being developed by the Kessel Run Experimentation Lab (KREL); an organic Air Force software development MTA effort. The Marine Corps will primarily inherit the Air Force's software suite called the Kessel Run All Domain Operations Suite (KRADOS) - formerly C2AOS-C2IS - from the larger AOC-WS upgrade efforts. The KRADOS product will replace legacy TBMCS software as the joint solution for the execution of the Air Battle Plan (ABP). As the USAF leads the development of its replacement for their TBMCS-Force Level capability, the Marine Corps is aligning its investments toward the ability to host the new capability in the Marine Corps cyber network and combat operating environments, to include cloud-based technology solutions and network architecture. The Marine Corps TBMCS Next Generation Suite strategy includes developmental and operational testing with joint partner laboratories (i.e. CAOC-X, Langley AFB; 45th Test Squadron) as well as Marine peculiar system of systems interoperability evaluations within its own engineering support centers (i.e. NSWC Crane; MCTSSA, Camp Pendleton) and Marine test events. The Air Force seeks a deployment of the new capability in Q1 FY 2023 of and the Marine Corps plans to stay aligned to this schedule by testing released software in concert with the Air Force but will not dispose of TBMCS-MC until Q4 FY 2023. The Marine Corps will determine replacement of the current legacy TBMCS-MC when testing and evaluation confirms the new system is ready to provide sufficient capability to enable Marines to plan and execute aviation command and control and Air Battle Management operations in a joint environment.

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CTN - The USMC's CTN acquisition strategy is to participate in the USN's Cooperative Engagement Capability (CEC) program procurement and testing, making necessary modifications to support the Marine Corps' requirement. Due to continued performance shortfalls, cost growth, and schedule delays in the Common Array Block (CAB) antenna program, PEO IWS 6.0 and CTN conducted a deep dive of the CAB program which led to the assessment that the CAB design would not meet current and future antenna requirements for both the Navy CEC and CTN and thus canceled the CAB antenna program. CTN capitalized upon the cancellation of CAB to support the technology refresh (TR) of the CTN system.
The TR will address system obsolescence and enable CTN to remain aligned with the development of US Navy CEC Increment II upgrade as well as maintain CEC interoperability which is vital as CTN is the USMC gateway to Naval Integrated Fire Control-Counter Air (NIFC-CA) that enables the ACE to achieve resiliency of joint air C2 in an Expeditionary Advanced Base Operations (EABO) environment and supports CMC FD initiatives. The TR upgrade will improve CTN components: the Signal Data Processor-Sierra (SDP-S), Compact Solid State Antenna (CSSA), voice communications, and AN/USG-4B Shelters. These upgrades will directly result in improved interfaces with the AN/TPS-80 Ground/Air Task Oriented Radar (G/ATOR) and the Common Aviation C2 System (CAC2S) through displacement of sensor and C2 via RF link and multiple radar connections, providing the Marine Air-Ground Task Force (MAGTF) and Joint Task Force Commanders an improved ground based sensor netting solution that interfaces with the Navy's CEC network. CTN will continue to support the development of Mode 5 interfaces with the Ground/Air Task Oriented Radar (G/ATOR) and the Common Aviation Command and Control System (CAC2S). The Mode 5 is CTN's Identification Friend or Foe (IFF) capability.

RVVT - The RVVT acquisition strategy is to continue integration of Video Down-Link (VDL) systems into new and existing sensor platforms by enhancing the encryption, range, and reducing the power and weight requirements in order to support existing and planned capabilities supporting targeting and fires activities. Efforts to integrate Full Motion Video (FMV) to support Joint Fires Observers (JFOs) and Joint Terminal Attack Controllers (JTACs) is an ongoing requirement to maintain interoperability with new and existing sensor systems.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	267.138	0.000		0.000		0.000		-		0.000	-	-	-
CTN Engineering Devlopment	C/CPFF	NAVSEA PEO IWS : Washington, DC	23.842	0.742	Feb 2020	0.400	Feb 2021	0.303	Feb 2022	-		0.303	-	-	-
ABM Product Development	C/FFP	NSWC Crane : Crane, IN	0.000	0.000		0.689	Nov 2020	1.100	Nov 2021	-		1.100	-	-	-
RVVT	MIPR	AMRDEC : Huntsville, AL	3.380	0.842	Nov 2019	0.000		0.000		-		0.000	-	-	-
RVVT	MIPR	SMDC : Huntsville, AL	0.000	0.000		0.205	Nov 2020	0.000		-		0.000	-	-	-
RVVT	WR	NAWC/China Lake : China Lake, CA	0.000	0.000		0.000		1.328	Nov 2021	-		1.328	-	-	-
		Subtotal	294.360	1.584		1.294		2.731		-		2.731	-	-	N/A

Remarks

CTN: The $0.097M funding decrease from FY 2021 to FY 2022 is due to the reduction of scope for NIFC-CA integration development and transitioning to developmental testing.
ABM: The $0.411M funding increase from FY 2021 to FY 2022 is to support the integration development of the TBMCS-MC Next Generation Suite PRS.
RVVT: In FY 2022 the software development effort will transition from SMDC to NAWC/China Lake. The net increase of $1.123M from FY 2021 to FY 2022 is due to the addition of the integration of the Full Motion Video into the Marine Corp Situational Awareness Tablets.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	47.878	0.000		0.000		0.000		-		0.000	-	-	-
CTN Engineering Support	WR	NSWC : Dahlgren, VA	7.362	0.200	Jan 2020	0.326	Jan 2021	0.000		-		0.000	-	-	-
CTN Engineering Support	Various	Travel-TAD : Not Specified	1.158	0.014	Sep 2020	0.026	Sep 2021	0.015	Sep 2022	-		0.015	-	-	-
ABM Engineering Support	Various	Travel - TAD : Not Specified	0.075	0.000	Sep 2020	0.075	Sep 2021	0.165	Sep 2022	-		0.165	-	-	-

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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ABM C2 SME support	C/FFP	NSWC Crane : Crane, IN	0.300	0.115	Dec 2020	0.000		0.000		-		0.000	-	-	-
ABM C2 SME support	C/CPFF	DTIC : Fort Belvoir, VA	0.000	0.000	Nov 2019	0.717	Nov 2020	0.510	Nov 2021	-		0.510	-	-	-
		Subtotal	56.773	0.329		1.144		0.690		-		0.690	-	-	N/A

Remarks

CTN: The $0.337M funding decrease from FY 2021 to FY 2022 is due to reduced travel necessary for NIFC-CA integration development.
ABM: The $0.117M funding decrease from FY 2021 to FY 2022 is due to the completion of the TBMCS-MC Next Generation Suite critical analysis efforts to support operational and developmental testing.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	59.222	0.000		0.000		0.000		-		0.000	-	-	-
CTN Developmental Testing	WR	NSWC Corona : Corona, CA	2.666	0.250	Feb 2020	0.065	Nov 2020	0.238	Nov 2021	-		0.238	-	-	-
CTN Engineering/Cyber Security Development	C/CPFF	NAVSEA PEO IWS : Washington DC	3.677	0.405	Jan 2020	1.168	Dec 2020	1.252	Dec 2021	-		1.252	-	-	-
CTN Test Support	WR	NSWC Dahlgren : Dahlgren, VA	0.291	0.000		0.564	Nov 2020	0.687	Nov 2021	-		0.687	-	-	-
ABM Engineering Support	WR	NSWC : Crane, IN	0.000	0.919	Oct 2019	1.082	Oct 2020	0.995	Jun 2022	-		0.995	-	-	-
ABM Cyber Security Support	C/FFP	NSWC Indian Head : Indian Head, MD	0.049	0.000		0.145	Mar 2021	0.500	Mar 2022	-		0.500	-	-	-
ABM Operational Test Support	WR	MCOTEA : Quantico, VA	0.620	0.600	Dec 2019	0.000		0.000		-		0.000	-	-	-
ABM Engineering Support	C/FFP	NSWC Crane : Crane, IN	0.000	0.321	Jun 2020	1.222	Jun 2021	0.000		-		0.000	-	-	-
ABM Developmental Test Support	C/FFP	MCTSSA : Camp Pendleton, CA	0.315	0.425	Jan 2020	0.000		0.000		-		0.000	-	-	-

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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	66.840	2.920		4.246		3.672		-		3.672	-	-	N/A

Remarks

CTN: The $0.386M funding increase from FY 2021 to FY 2022 is to support the qualification testing for the next generation Signal Data Processor (SDP).
ABM: The $0.938M funding decrease from FY 2021 to FY 2022 is due to the completion of the TBMCS-MC Next Generation Suite ILA integration with the Air Force and a reduction of required scope of IA testing.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	36.391	0.000		0.000		0.000		-		0.000	-	-	-
ABM Program Support	C/FFP	NSWC Crane : Crane, IN	0.396	0.256	Apr 2020	0.000		0.000		-		0.000	-	-	-
		Subtotal	36.787	0.256		0.000		0.000		-		0.000	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	454.760	5.089		6.684		7.093		-		7.093	-	-	N/A

Remarks

The Project 2273 budget supports a $0.409M increase FY 2021 to FY 2022 to include the RVVT addition of the integration of the Full Motion Video into the Marine Corp Situational Awareness Tablets, CTN's support of Naval Integrated Fire Control-Counter Air integration & testing, and development of the TBMCS-MC Next Generation Suite Production Representative System (PRS).

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2273 / *Air Ops Cmd & Control (C2) Sys*

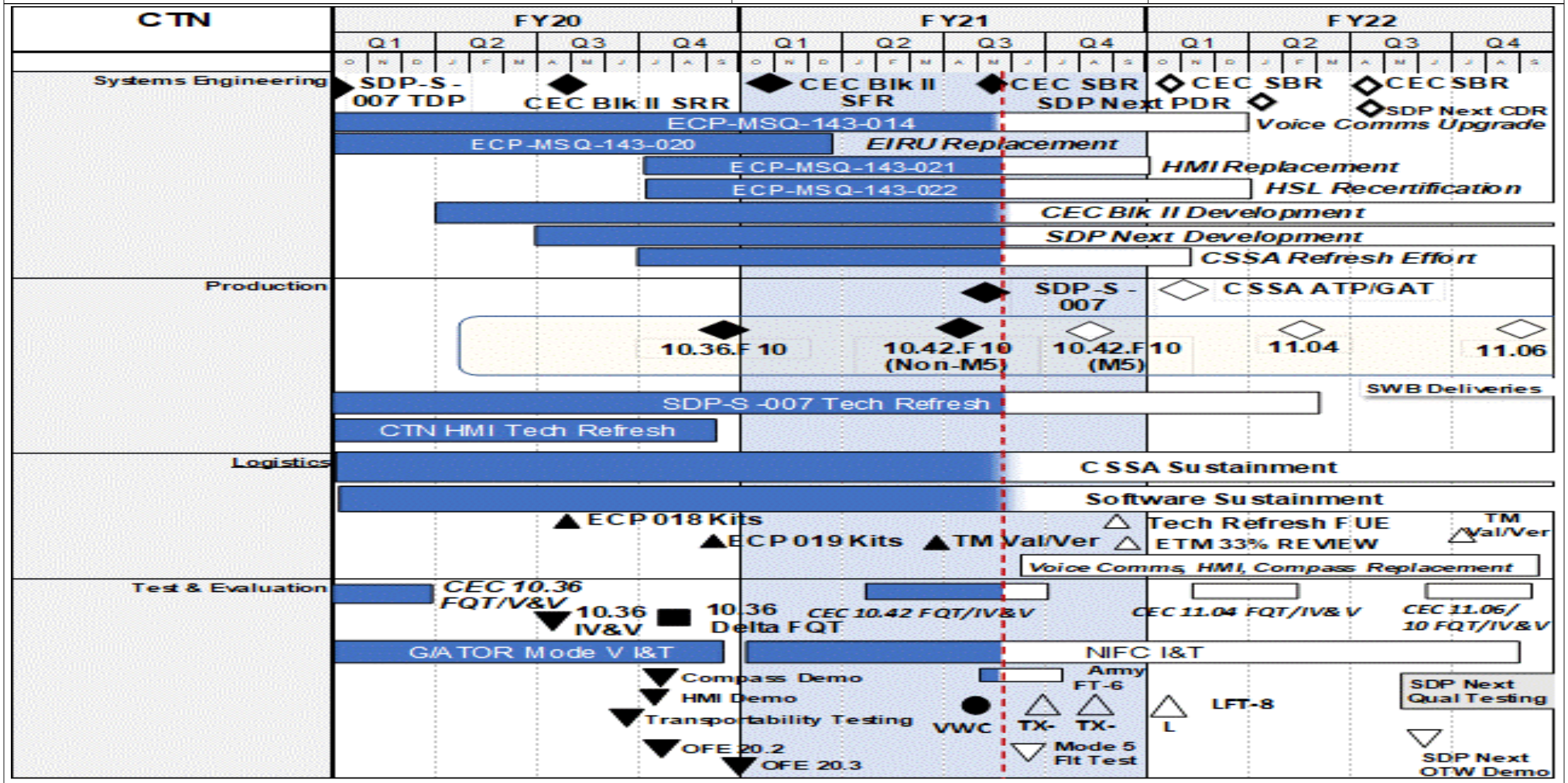


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2273 / *Air Ops Cmd & Control (C2) Sys*

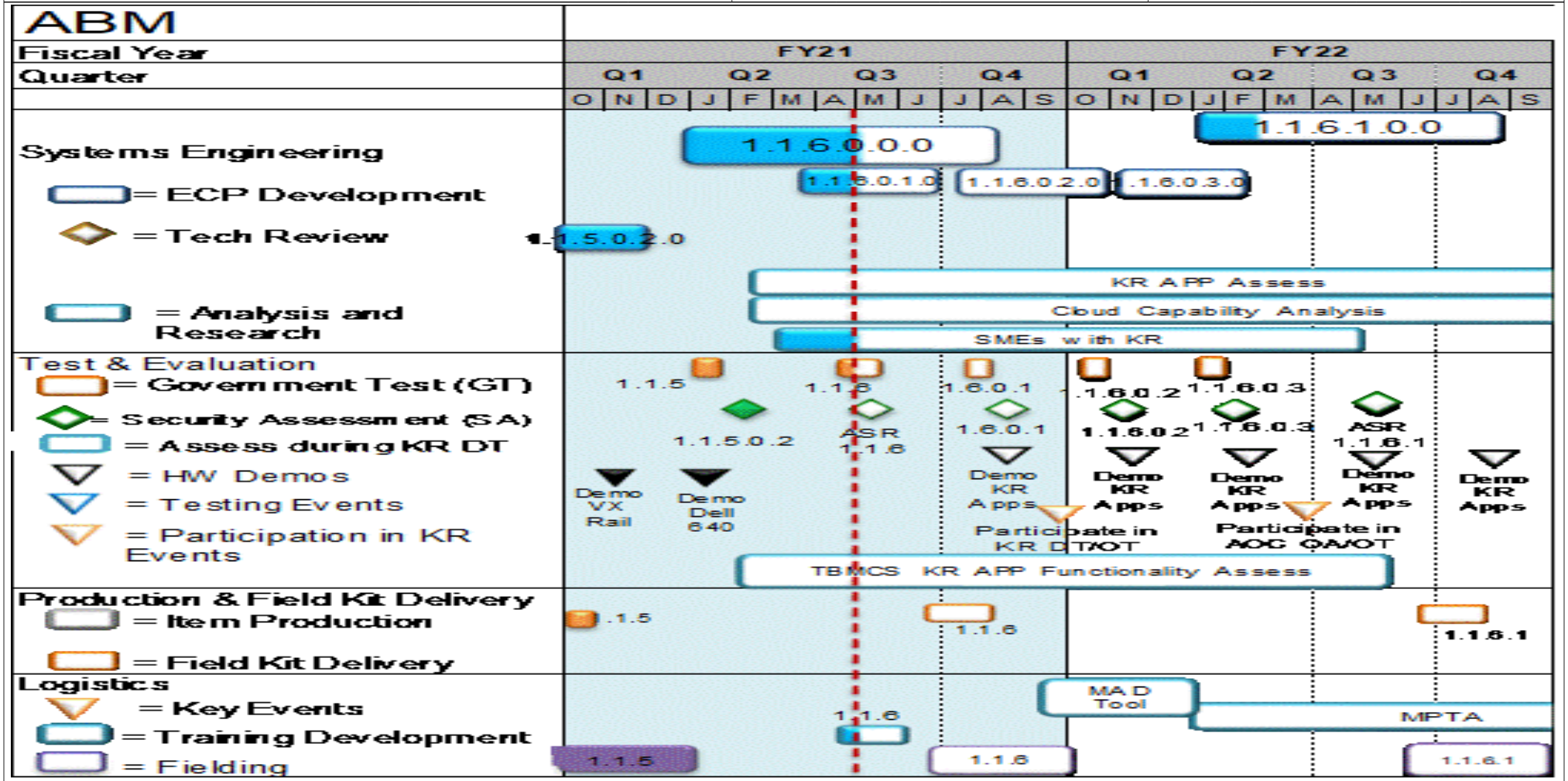
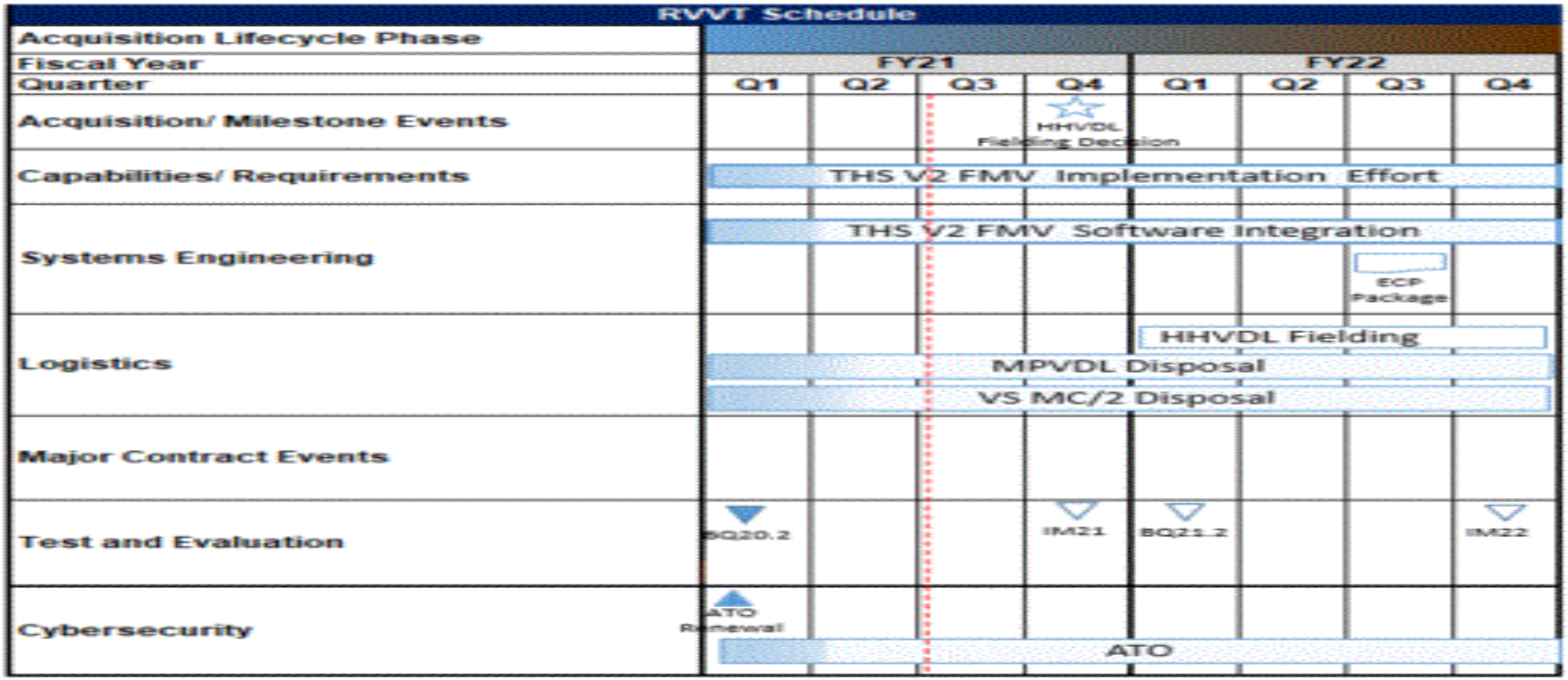


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2273 / *Air Ops Cmd & Control (C2) Sys*



LEGEND
- MDA Decision Approval (non-Milestone ((MS))
- MS/Key Acquisition Event
- Review
- Documentation
- Assessment, Proposal

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2273 / *Air Ops Cmd & Control (C2) Sys*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2273				
CTN IPP Schedule: CTN Technology Refresh	1	2020	2	2022
CTN IPP Schedule: CSSA Sustainment	1	2020	4	2022
CTN IPP Schedule: Software Sustainment	1	2020	4	2022
CTN IPP Schedule: CEC FQT/IV&V	1	2020	4	2022
CTN IPP Schedule: G/ATOR Mode 5 Integration and Testing	1	2020	4	2020
CTN IPP Schedule: Naval Integrated Fire Control-Counter Air Integration and Testing	1	2021	4	2022
CTN IPP Schedule: Signal Data Processor (SDP) Next qualification testing	2	2022	4	2022
ABM IPP Schedule: Annual Software Update Releases (1.1.5-1.1.6)	1	2020	4	2022
ABM IPP Schedule: Annual software Government Test (GT) and Cyber security assessment (SA)	1	2020	4	2022
ABM IPP Schedule: TBMCS-MC Replacement production representative system development	4	2021	3	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy												Date: May 2021
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*				Project (Number/Name) 2274 / *Command & Control Warfare Sys*			
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
2274: *Command & Control Warfare Sys*	64.761	14.252	8.592	22.372	-	22.372	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

MARINE AIR GROUND TASK FORCE (MAGTF) ELECTRONIC WARFARE (EW) GROUND FAMILY OF SYSTEMS (MEGFoS)- MEGFOS are critical CMC Force Design programs. Full funding of MEGFOS is required for FY 2022 for this key Force Design Initiative as it supports expanded research and development of Electronic Warfare-related capabilities required for MEGFoS platform development. This capability will provide essential force protection by providing Counter Radio-Controlled Improvised Explosive Device (RCIED) and Counter Unmanned Aerial System (C-UAS) capabilities as well as the capability to sense threat spectrum usage within an area of responsibility. The increase of $13.78M from FY 2021 to FY 2022 is primarily due efforts to integrate common, open hardware backplane based off the C4ISR Modular Open Suites of Standards (CMOSS) and a Sensor Open Systems Architecture; development of networking capability for dismounted and team portable systems to provide a high level of situational awareness; development of MEGFoS Dismounted Systems and the integration of S&T efforts. Additional funds will also initiate characterization testing for networking and Graphic User Interface (GUI) ECP. These funds support development of both mounted and dismounted MEGFoS systems and will support a common operating picture, allowing all elements of the MAGTF to gain and maintain awareness of the electromagnetic spectrum within their area of responsibility. MEGFOS is a key component of the Expeditionary Advanced Base Operations (EABO) construct where small maneuver units will require self-protect and organic sensing capabilities. Failure to fully fund this effort will result in delays of or unsynchronized MEGFoS development efforts and greater risk to mounted and dismounted forces operating in a hostile RCIED and UAS environment.

The Marine Corps is seeking to evolve EW capabilities from existing legacy, proprietary EW systems to capabilities for an advanced multi-function electronic warfare mission focused on supporting Electromagnetic Spectrum Operations (EMSO). MEGFOS is the future for team portable, vehicle mounted and dismounted advanced tactical warfare capability supporting the EMSO concept. MEGFoS will provide interconnected EW systems developed using the C4ISR/ EW Modular Open Suite of Standards (CMOSS) and Sensor Open Systems Architecture (SOSA) standards that will operate across a range of frequencies in order to provide the Marine Corps the ability to maneuver efficiently inside the electromagnetic spectrum. The program is essential for ensuring Marines have the ability to protect friendly use of spectrum, sense all spectrum usage in an area of responsibility, and to target adversaries inside spectrum with the intent to deny, delay, or degrade an adversary's decision making cycle.

COUNTER RADIO-CONTROLLED IMPROVISED EXPLOSIVE DEVICE (RCIED) ELECTRONIC WARFARE (USMC CREW) SYSTEMS are vehicle mounted and dismounted modular programmable multi-band radio frequency jammers designed to deny enemy use of selected portions of the radio frequency spectrum in the vicinity of the jammer to counter the RCIED threat. The mounted and dismounted systems provide Marines in vehicle convoys and on foot with the necessary protection from the continued and evolving threat of deadly RCIEDs. CREW received an Urgent Statement of Need (USON) 30 January 2018 directing the development of Multi-Function Electronic Warfare (MFEW) systems. Legacy Crew Capabilities and the MFEW development will be components of the Marine Electronic Warfare Ground Family of Systems (MEGFoS). Beginning FY21, USMC CREW/MFEW funding has been realigned into the MEGFoS funding profile.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2274 / *Command & Control Warfare Sys*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: USMC CREW - Product Development	6.325	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Title: USMC CREW - Support	0.660	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Title: USMC CREW - Test and Evaluation	3.345	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Title: MEGFoS - Product Development	3.922	6.631	13.784	0.000	13.784
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2274 / *Command & Control Warfare Sys*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Description: The change of $4.580M in FY 2021 (2021 request) to $6.631M in FY 2021 (2022 request) is due to the Marine Corps determination to focus on opportunities to accelerate MEGFoS development. ***FY 2021 Plans:*** - Continue development of MFEW capabilities such as electronic attack (EA)/electronic support (ES) capabilities, fully networked voice EA and advanced electronic warfare (EW) techniques. - Initiate development of a common, open hardware backplane based off the Command, Control, Communications, Computers and Intelligence Surveillance and Reconnaissance (C4ISR)/EW Modular Open Suites of Standards (CMOSS), and Sensor Open Systems Architecture. - Develop hardware components that will be interoperable across mounted, dismounted and team portable systems for MEGFOS. - Integrate advanced transceivers to fully realize advanced EA/ES capabilities. - Develop networking capability for mounted and dismounted systems to provide a high level of situational awareness to commanders and Marines at the company level and fully realize advanced EA/ES capabilities for MFEW. ***FY 2022 Base Plans:*** - Complete development of MFEW capabilities such as electronic attack (EA)/electronic support (ES) capabilities, fully networked, and advanced electronic warfare (EW) techniques. - Initiate integration of the developed common, open hardware backplane based off the C4ISR Modular Open Suites of Standards (CMOSS), and a Sensor Open Systems Architecture. - Continue development of hardware components that will be interoperable across the mounted, dismounted and team portable systems for MEGFOS. - Complete integration of advanced transceivers to fully realize advanced EA/ES capabilities. - Complete the development of a networking capability for mounted and dismounted systems to provide a high level of situational awareness to commanders and Marines at the company level and fully realize advanced EA/ES capabilities for MFEW. - Initiate development of networking capability for dismounted and team portable systems to provide a high level of situational awareness to commanders and Marines at the company level and fully realize advanced EA/ES capabilities for MEGFoS. - Initiate the development of MEGFoS Dismounted Systems.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2274 / *Command & Control Warfare Sys*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Initiate integration of Science and Technology (S&T) efforts into MEGFoS. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The increase of $7.153M from FY 2021 to FY 2022 reflects initiation of the following efforts: integration of common, open hardware backplane based off the C4ISR Modular Open Suites of Standards (CMOSS) and a Sensor Open Systems Architecture; development of networking capability for dismounted and team portable systems to provide a high level of situational awareness to commanders and Marines at the company level; development of MEGFoS Dismounted Systems and the integration of S&T efforts into MEGFoS.					
Title: MEGFoS - Support	0.000	0.932	4.984	0.000	4.984
Articles:	-	-	-	-	-
FY 2021 Plans: - Provide systems engineering support for the MFEW (Modi II, MVPA II) MEGFoS Hardware backplane and Universal Test Sets by analyzing performance impacts resulting from compatibility, technology and software updates and environmental risks. - Support The Office of Naval Research (ONR) Future Naval Capabilities (FNC) Ensuring Defense in Operating System Resilience/Electronic Warfare Operating System Kernel (ENDOR/EWOK) software development and integration into MEGFoS hardware backplane. ***FY 2022 Base Plans:*** - Continue providing systems engineering support for the MFEW (Modi II, MVPA II) MEGFoS Hardware backplane and Universal Test Sets by analyzing performance impacts resulting from compatibility, technology and software updates and environmental risks. - Continue support of The Office of Naval Research (ONR) Future Naval Capabilities (FNC) Enabling Dynamic Operational Radio Frequency Operating Systems/Electronic Warfare Operating Kit (ENDOR/EWOK) software development and integration into MEGFoS hardware backplane. - Initiate MEGFoS dismounted development support. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2274 / *Command & Control Warfare Sys*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
The increase $4.052M from FY 2021 to FY 2022 is due to the initiation of MEGFoS dismounted development support.					
Title: MEGFoS - Test and Evaluation	0.000	1.029	3.604	0.000	3.604
Articles:	-	-	-	-	-
FY 2021 Plans: - Conduct developmental test of MEGFoS Architectures in relevant environments. - Conduct testing of new and developing load-sets ability to exploit or defeat advanced and emerging threat systems. - Conduct testing of mounted and dismounted MFEW engineering changes that will be procured and fielded.					
FY 2022 Base Plans: - Continue developmental test of MEGFoS Architectures in relevant environments. - Continue testing new and developing load-sets ability to exploit or defeat advanced and emerging threat systems. - Continue testing of the mounted and dismounted MFEW engineering changes that will be procured and fielded. - Initiate characterization testing for the Networking and enhanced Graphic User Interface (GUI) Engineering Change Proposal (ECP).					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: The increase of $2.575M from FY 2021 to FY 2022 is due to the initiation of the characterization testing for the Networking and enhanced Graphic User Interface (GUI) Engineering Change Proposal (ECP).					
Accomplishments/Planned Programs Subtotals	14.252	8.592	22.372	0.000	22.372

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/6520AA: *MARINE AIR GROUND TASK FORCE (MAGTF) EW Ground FoS (MEGFoS)*	0.000	0.000	72.071	-	72.071	-	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2274 / *Command & Control Warfare Sys*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• RDTE/2274: *MEGFoS MTA Funding*	14.252	8.592	22.372	-	22.372	-	-	-	-	-	-

Remarks

RDTE Project 2274 funding FY 2020 - FY 2022 totaling $22.609M reflects funding associated with MEGFoS Middle Tier Acquisition (MTA) for rapid prototyping.

MTA Funding RDTEN/0206313M/2274:
FY20: 3.922
FY21: 5.753
FY22: 12.934

D. Acquisition Strategy

MARINE AIR GROUND TASK FORCE (MAGTF) ELECTRONIC WARFARE (EW) GROUND FAMILY OF SYSTEMS (MEGFoS): The CREW and MFEW programs will continue to develop new counter techniques, improve capabilities, enhance software and develop upgrades to counter evolving threats and prevent technology obsolescence. Activities include waveform development, non-recurring engineering for system enhancements, capability upgrades, and the testing/government studies required to support these changes. In FY 2021, the initial 300 MFEW Mounted systems will begin issuance to the FMF. An additional 450 MFEW Mounted systems are planned for procurement and issuance between FY 2022-24. MFEW systems are based on a USON requirement and will be augmented by the MEGFoS systems starting in FY 2025. MEGFoS will provide a significant improvement in capability when compared to MFEW and what is commercially available today. The MEGFoS Team Portable system was authorized for Middle Tier of Acquisition Rapid Prototyping in 3Q FY 2020, with planned prototyping completion in 3Q FY 2023. Upon successful prototyping of the Team Portable variant, MEGFoS will procure 40 systems. The intent is to use the MEGFoS Team Portable solution as the basis for the Dismounted and Mounted variants. Procurement of the Dismounted systems is planned for FY 2024-25, while the MEGFoS Mounted systems are being developed. The iterative development approach for MEGFoS, focusing on a common hardware and software standard, provides the opportunity to integrate all EW sensors into a common operating picture, allowing all elements of the MAGTF to gain and maintain awareness in the electromagnetic spectrum. This will include, but is not limited to, Cyber, Communications, Signature Management, and advanced signals detection and attack techniques.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 2274 / *Command & Control Warfare Sys*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USMC CREW	WR	NIWC-CD : CRANE, IN	0.000	2.125	Nov 2019	0.000		0.000		-		0.000	-	-	-
USMC CREW	C/CPFF	MCSC : QUANTICO, VA	0.000	4.200	Sep 2020	0.000		0.000		-		0.000	-	-	-
MEGFoS	TBD	MCSC : QUANTICO, VA	0.000	0.000		6.631	Dec 2020	4.123	Dec 2021	-		4.123	-	-	-
MEGFoS	WR	NIWC-LANT : CHARLESTON,SC	0.000	0.000		0.000		3.635	Oct 2021	-		3.635	-	-	-
MEGFoS	C/CPFF	NIWC-LANT : CHARLESTON, SC	0.000	3.922	Nov 2020	0.000		3.800	Jun 2022	-		3.800	-	-	-
MEGFoS	C/CPFF	JHU/APL : LAUREL, MD	0.000	0.000		0.000		2.226	Dec 2021	-		2.226	-	-	-
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	25.926	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	25.926	10.247		6.631		13.784		-		13.784	-	-	N/A

Remarks

The increase of $7.153M from FY 2021 to FY 2022 reflects initiation of the following efforts: integration of common, open hardware backplane based off the C4ISR Modular Open Suites of Standards (CMOSS) and an open software architecture; development of networking capability for Dismounted and Team Portable systems to provide a high level of situational awareness to commanders and Marines at the company level and fully; the development of MEGFoS Dismounted Systems and as well as the integration of S&T efforts into MEGFoS.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USMC CREW	WR	SSC-A : CHARLESTON, SC	0.000	0.660	Feb 2020	0.000		0.000		-		0.000	-	-	-
MEGFoS	WR	NIWC-LANT : CHARLESTON, SC	0.000	0.000		0.932	Mar 2021	0.760	Dec 2021	-		0.760	-	-	-
MEGFoS	C/CPFF	NIWC-LANT : CHARLESTON	0.000	0.000		0.000		2.800	Nov 2021	-		2.800	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 2274 / *Command & Control Warfare Sys*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MEGFoS	TBD	TBD : TBD	0.000	0.000		0.000		1.424	Jun 2022	-		1.424	-	-	-
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	7.189	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	7.189	0.660		0.932		4.984		-		4.984	-	-	N/A

Remarks

The increase of $4.052M from FY 2021 to FY 2022 is due to the initiation of MEGFoS dismounted development support.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USMC CREW	MIPR	YPG : YUMA, AZ	0.000	1.747	Apr 2020	0.000		0.000		-		0.000	-	-	-
USMC CREW	WR	NIWC-CD : CRANE, IN	0.000	1.598	May 2020	0.000		0.000		-		0.000	-	-	-
MEGFoS	MIPR	YPG : YUMA, AZ	0.000	0.000		1.029	May 2021	0.863	May 2022	-		0.863	-	-	-
MEGFoS	WR	NIWC-CD : CRANE, IN	0.000	0.000		0.000		0.500	Oct 2021	-		0.500	-	-	-
MEGFoS	WR	NIWC-LANT : CHARLESTON, SC	0.000	0.000		0.000		2.091	Oct 2021	-		2.091	-	-	-
MEGFoS	C/CPFF	NIWC-LANT : CHARLESTON, SC	0.000	0.000		0.000		0.150	Dec 2021	-		0.150	-	-	-
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	18.586	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	18.586	3.345		1.029		3.604		-		3.604	-	-	N/A

Remarks

The increase of $2.575M from FY 2021 to FY 2022 is due to the initiation of the characterization testing for the Networking and enhanced GUI ECP.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2274 / *Command & Control Warfare Sys*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	13.060	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	13.060	0.000		0.000		0.000		-		0.000	-	-	N/A

Remarks

The change of $2.051M in FY 2021 (2021 request) to $0.000M in (2022 request) is due to the Marine Corps determination that excessive additional investment in Multi-Function Electronic Warfare (MFEW) requirements would put Marine Air-Ground Electronic Warfare Ground Family of Systems (MEGFOS) funding and schedule at risk.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	64.761	14.252		8.592		22.372		-		22.372	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2274 / *Command & Control Warfare Sys*

MEGFoS Combined Program Schedule

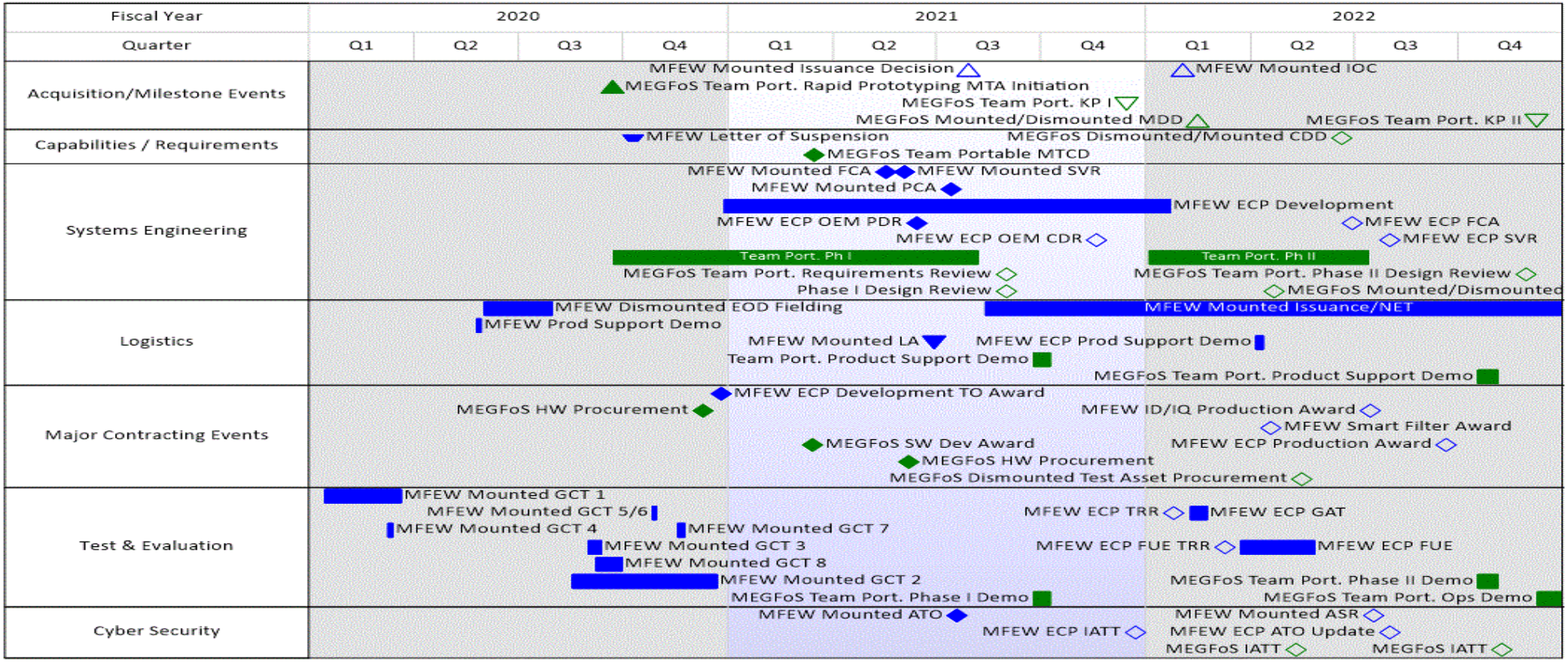


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2274 / *Command & Control Warfare Sys*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2274				
MEGFoS Team Portable Prototype Development	3	2020	3	2022
MEGFoS Dismounted and Mounted MDD	1	2022	1	2022
MEGFoS Team Portable Phase II Test and Ops Demo	4	2022	4	2022
MFEW ECP Development	4	2020	1	2022
MFEW Mounted Issuance Decision	3	2021	3	2021
MFEW ECP Production Award	3	2022	3	2022
MFEW ID/IQ Production Award	3	2022	3	2022

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COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2275: *Marine Corps Tactical Radio Systems*	99.784	11.334	14.469	15.065	-	15.065	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Tactical Communications Modernization (TCM): TCM contains multiple CMC Force Design programs. TCM supports the research, testing, and evaluation of non-developmental tactical voice and data radio systems for mounted and dismounted operations within all echelons of the Marine Air-Ground Task Force. The testing will ensure the communication systems are joint networking capable and support National Security Agency (NSA) Communications Security (COMSEC) Modernization requirements. The funding provides contracted engineering support, facility test support, and test reporting for multiple systems. These include the Mobile User Objective System (MUOS), High Frequency Radio II (HFR II), and Multi-Channel Radio Family of System (MCR FoS) [Multi-Channel Man Pack (MCMP) and Multi-Channel Handheld (MCHH)] radios, High-Altitude Attritable Link Offset, terminals, antennas, current systems requiring updates or obsolescence issues, and Joint Enterprise Network Manager (JENM).

Networking On The Move (NOTM) - This is a critical CMC Force Design program, and it is identified among the service's top ten critical enablers for modernization to close Force Design 2030 gaps related to Expeditionary Advanced Base Operations (EABO), Littoral Operations in a Contested Environment (LOCE) and Distributed Maritime Operations (DMO). NOTM capability provides beyond line of sight (BLOS) satellite communication (SATCOM) and terrestrial line of sight (LOS) transmissions, and access to applications and web-services required to digitally facilitate tasks spanning the entire range of military operations (ROMO) both at the halt (ATH) and while on the move (OTM) in multiple domains, sea, air and land, and while transitioning between. Currently the USMC has two NOTM programs NOTM Ground Combat Vehicle (NOTM-GCV) and NOTM Airborne (NOTM-A) with a requirement to field vehicle kits for the following platforms: MATV, HMMWV, JLTV, AAV, ACV, ULTV, KC-130J and MV-22. One NOTM system for HMMWV, MATV, JLTV, and AAV consists of three vehicles (1 Point of Presence and 2 Staff Vehicles). One NOTM system for ULTV, ACV, and airborne platforms consists of only one Point of Presence vehicle. As platforms are divested or new platforms developed, NOTM requirements will be updated to incorporate them as required. The NOTM funding profile is atypical and will present increases and decreases as new platforms are added or divestment actions drive necessary retrofits.

Wideband Satellite Communications (WSATCOM) (formerly VSAT): This is a critical CMC Force Design program. WSATCOM is an integrated satellite communications family of systems (FoS) that is the primary beyond line-of-sight (BLOS) communications platform for the MAGTF. This FoS supports the expeditionary advanced base operations concept by enabling communication throughout all levels of distributed MAGTF operations. WSATCOM systems' modular architecture supports technology insertion through scalable and flexible SATCOM technologies. WSATCOM uses commercial Ku and military X and Ka frequency bands to provide BLOS connectivity to support intra-MAGTF communications (NIPRNET, SIPRNET, telephony) at all levels of the MAGTF. It directly and indirectly supports the seven functions of information operation concepts, enabling commanders at all levels to reliably command and control forces and to support a wide range of information operation missions.

Secure Mobile Anti-Jam Reliable Tactical-Terminal (SMART-T): SMART-T provides tactical users with protected data and voice via Advanced Extremely High Frequency (AEHF) satellite communications. The SMART-T system is transported on High Mobility Multipurpose Wheeled Vehicles (HMMWVs), providing MAGTF Commanders a

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secure, survivable, long-haul, low/medium data rate communications link not subject to terrain masking and horizon limitations. The SMART-T is the only USMC asset that possesses a SATCOM AEHF capability. Individuals of this Family of Systems include Very Small Aperture Terminal (VSAT) Expeditionary, Small, Medium, and Large. These systems will be replaced by the Marine Corps Wide-Band SATCOMM (MCWS) Expeditionary (MCWS-X)with IOC in FY21, and Light and Heavy (MCWS-L/H) and FY23 will focus on testing of the MCWS systems.

Terrestrial Wideband Transmission Systems (TWTS): These are CMC Force Design programs. TWTS is a portfolio that provides the Fleet Marine Force with the capabilities of secure Beyond Line of Sight (BLOS) and Line of Sight (LOS) terrestrial digital data transmission. The BLOS capability will be provided by the Next Generation Troposcatter (NGT) which is currently in the Engineering and Manufacturing Development Phase. The NGT capability will provide significantly higher bandwidth communications over longer distances compared to the Army/Navy Transportable Radio Communications-170A (AN/TRC-170A) that has been in operations and sustainment since 1992. The LOS capability will be provided by the Line-of-Sight Radio System Family of Systems (LRS FoS) which will begin fielding in FY 2021 and an optical communications system, which was recently designated as an acquisition program. The LRS FoS will provide Naval integration over long distances with both shore-to-shore and shore-to-ship connectivity. LRS FoS includes a Transit Case based system for operational flexibility, a vehicle integrated system (MRC), and the Tactical Elevated Antenna Mast II (TEAMS II) which provides the antenna height needed for transmitting over significant distances. The optical communications system will provide Marines with an extremely high data rate communications pathway. TWTS will also continue to sustain legacy systems such as the AN/TRC-170, Army-Navy/Mobile Radio Communications (AN/MRC-142), Wireless Point to Point Link (WPPL), and Tactical Elevated Antenna Mast System (TEAMS) until NGT, LRS FoS, and the optical communications systems are fielded. The new capabilities within the TWTS portfolio will modernize the Marine Corps ability to connect networks over long distances in contested and satellite-denied environments.

Combat Operations Center (COC): COC provides commanders with a rapidly deployable, common, modular, and scalable operational agency that facilitates command and control across the full spectrum of MAGTF operations. The AN/TSQ-239A Family of Systems (FoS), is designed to provide centralized C2 Operational Facilities (OPFAC) to collect, process, and disseminate tactical data for the commander and staff of a Marine Expeditionary Force (MEF), Division, Wing, Marine Logistics Group, Regiment, Marine Air Group, Battalion, and Squadron. The COC provides the commander with a Common Operational Picture (COP) and tactical data and communications assets needed to plan and conduct operations in an expeditionary combat environment. The system enables analytical and intuitive decision-making with a modular and scalable equipment set consisting of a common module OPFAC, C2 system, visual displays, and SW. Existing Tactical Data System software, previously resident on numerous platforms throughout the Marine Air-Ground Task Force (MAGTF), have been re-hosted on the COC system to provide commanders with integrated data access and communications. COC transitioned from Project C2273 to Project C2275 beginning FY 2019. COC program office will begin developing a design for a update to the current COC configuration called Next Generation Operational Facility (OPFAC). The Next Generation OPFAC will provide the MAGTF with a more agile and modular COC capability to better support future Expeditionary Advanced Based Operations (EABO) that require a smaller physical presence. In FY 2021 the Combat Operations Center (COC) requirements transitions into the Combat Data Network (CDN) program PE 0206313M Project 2276 under the title Common Hosting Environment (CHE).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: TCM: Product Development	1.220	1.274	1.199	0.000	1.199
Articles:	-	-	-	-	-

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
FY 2021 Plans: - Continue funding the Marine Corps fair share cost for development of the Joint Enterprise Network Manager (JENM) application required for MUOS. This application is required to manage the network, and for users to utilize the MUOS capability. ***FY 2022 Base Plans:*** - Continue funding the Marine Corps fair share cost for development of the Joint Enterprise Network Manager (JENM) application required for MUOS. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** FY 2021 to FY 2022 decrease of $0.075M is due to a reduction in the fair share cost for the development of JENM.					
Title: TCM: Engineering and Program Support	0.117	0.349	0.356	0.000	0.356
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue engineering and support efforts for radio systems, including MCHH, MCMP and HRF II, and cryptographic modernization efforts associated with those systems. ***FY 2022 Base Plans:*** - Continue engineering and support efforts for radios, such as MCHH, as well as crypto modernization efforts. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** No significant change from FY 2021 to FY 2022.					
Title: TCM: Test and Evaluation Support	2.893	5.458	4.073	0.000	4.073
Articles:	-	-	-	-	-
FY 2021 Plans:					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Procure test assets (to include High Altitude Radio Delay assets) to support testing to mitigate obsolescence issues. - Test events including software development test, road shock, shake and vibration testing and MIL-STD testing for TCM FoS, such as HFR II, MCR FoS, and system updates or obsolescence. ***FY 2022 Base Plans:*** - Procure test assets to support testing to mitigate obsolescence issues. - Test events including software development test, road shock, shake and vibration testing and MIL-STD testing for TCM FoS and system updates or obsolescence. - Support procurement of antenna test asset and test events. (This initiative supports the following National Defense Strategy objective: sustain joint force military advantage) ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The FY 2021 to FY 2022 decrease of $1.385M is due to variation of cost and quantity of test articles being procured and testing events.					
Title: TCM: Management Services	0.529	0.394	0.924	0.000	0.924
Articles:	-	-	-	-	-
FY 2021 Plans: - Support FFRDC engineering and program support for the TCM Family of Systems (FoS), MCR FoS, MBR II equipment and legacy equipment reaching obsolescence. ***FY 2022 Base Plans:*** - Support FFRDC engineering and program support for the TCM Family of Systems (FoS), HFR II, MCR FoS, MBR II equipment, legacy equipment reaching obsolescence, and research/testing of new technology. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The FY 2021 to FY 2022 increase of $0.530M is due to the research and testing being done for new technology to meet emerging requirements in the operational environment.					
Title: NOTM: Product Development	1.020	3.820	4.501	0.000	4.501

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Articles:	-	-	-	-	-
Description: Networking on the Move Research and Development funding supports the design, development, prototyping and Engineering for technology refresh and upgrades, system refreshes and new capabilities. ***FY 2021 Plans:*** - Initiate the prototyping of NOTM systems onto Light Armored Vehicle and Amphibious Combat Vehicle platforms. - Initiate the development of network management/configuration tools that support future artificial intelligence (AI) integration. - Initiate testing of network resiliency tools to support operations in the future cyber environment. - Initiate the testing of satellite network tools to increase resiliency with protected waveforms. - Initiate the research and prototype of NOTM-Air improved satellite antenna systems to reduce impact on aircraft integration. ***FY 2022 Base Plans:*** - Continue prototyping efforts in support of NOTM Amphibious Combat Vehicle integration. - Continue development efforts in support of network and SATCOM resiliency tools. - Continue development of network management/configuration tools and artificial intelligence integration. - Continue NOTM-Air research efforts focused on digital interoperability and potential size, weight, and power reductions. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.681M from FY 2021 to FY 2022 supports additional NOTM Amphibious Combat Vehicle (ACV) Prototyping, SATCOM resiliency development, Artificial Intelligence integration, and size, weight, and power reductions to the NOTM-Air capability. These efforts are continued from FY 2021 to full development in FY 2022. This is a key enabler for the Force Design 2030 requirement for Distributed Maritime Operations and the requirement for resilient, AI/ML aided networking in a contested communications environment against a peer adversary.					
Title: NOTM: Test and Evaluation Support	0.000	0.424	2.521	0.000	2.521
Articles:	-	-	-	-	-

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Description: Networking on the Move Test and Evaluation funding supports acquisition testing for design, development, production, engineering and fielding of system variants and equipment upgrades. ***FY 2021 Plans:*** - Initiate tests and certification in support of satellite communication systems hardening and resiliency. - Initiate testing in support of network configuration and network management tool suit. - Initiate testing in support of NOTM-A SATCOM system improvements. ***FY 2022 Base Plans:*** - Complete tests and certification in support of satellite communication systems hardening and resiliency. - Complete testing in support of network configuration and network management tool suit. - Complete testing in support of NOTM-A SATCOM system improvements. - Initiate integration and usability testing in support of prototype SATCOM and network management tools/ upgrades. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $2.097M from FY 2021 to FY 2022 supports the test and evaluation of prototype SATCOM and network management tools/upgrades. This is key to the beyond line of sight (BLOS) capability and is a key enabler to Force Design 2030 operational concepts of Expeditionary Advance Base Operations and Littoral Operations in a Contested Environment.					
Title: WSATCOM (formerly VSAT): Product Development	0.468	0.558	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue WSATCOM GUI design and development efforts to mitigate cyber-security vulnerabilities. ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:***					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
The FY 2021 to FY 2022 decrease of $0.558M is due to change in acquisition strategy of the procurement of MCWS-L and MCWS-H test assets. Also GUI design and development efforts will complete in FY 2021.					
Title: WSATCOM (formerly VSAT): Engineering and Program Support	0.201	0.833	0.521	0.000	0.521
Articles:	-	-	-	-	-
FY 2021 Plans: - Produce engineering documentation, to include risk management plan and requirements traceability matrix, Test Plans and Systems Engineering Plan in support of Marine Corps Wide-band Satellite-Light and Heavy (MCWS-L/H). -Complete cybersecurity updates and patching in support of VSAT and MCWS-X					
FY 2022 Base Plans: - Produce engineering documentation, to include the Program Protection Plan, PSPEC, and Cyber Security Plan in support of Marine Corps Wideband Satellite-Light and Heavy (MCWS-l/H. - Initiate and complete Cybersecurity documentation and RMF planning for MCWS-L and MCWS-H.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: The FY 2021 to FY 2022 decrease of $0.312M is due to the decrease of MCWS-H engineering documentation support.					
Title: WSATCOM (formerly VSAT): Test and Evaluation	1.270	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue test and evaluation efforts for Marine Corps Wideband Satellite - Light (MCWS-L).					
FY 2022 Base Plans: - Initiate test and evaluation efforts for Marine Corps Wideband Satellite - Heavy (MCWS-H). - Continue test and evaluation efforts for Marine Corps Wideband Satellite - Light (MCWS-L).					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement:					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
The decrease of $0.240M from FY 2021 to FY 2022 is due to change in acquisition strategy of the procurement of MCWS-L and MCWS-H test assets.					
Title: WSATCOM (formerly VSAT): Management Services	0.055	0.247	0.095	0.000	0.095
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue engineering efforts through a FFRDC in support of analysis of requirements and research to mitigate end-of-life/end-of-sale, and component obsolescence for legacy VSAT family of systems until MCWS-L/H capabilities can be fielded. This included required ECPs, Software updates and Cyber security actions.					
FY 2022 Base Plans: - Continue engineering efforts through a FFRDC in support of analysis of requirements and research to mitigate end-of-life/end-of-sale, and component obsolescence got the VSAT FOS, until the MCWS L/H capabilities can be fielded.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: The FY 2021 to FY 2022 decrease of $0.152M is due to the change in acquisition strategy change of the evaluation of the MCWS L/H variants.					
Title: SMART-T: Management Services	0.000	0.067	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: - Engineering analysis through a FFRDC on future technical upgrades and research to mitigate end-of-life/end-of-sale, and component obsolescence in conjunction with Army Program Office.					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement:					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Decrease of $0.067M from FY 2021 to FY 2022 reflects commpletion of engineering analysis.					
Title: SMART-T: Engineering and Program Support ***Articles:*** ***FY 2021 Plans:*** - Conduct Engineering Change Proposals (ECPs) and Information Assurance (IA) support efforts to keep pace with Army Engineering Changes, ensuring interoperability with Joint Services. ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.030M from FY 2021 to FY 2022 reflects completion of ECPs and IA support efforts.	0.000 -	0.030 -	0.000 -	0.000 -	0.000 -
Title: TWTS: Engineering and Program Support ***Articles:*** ***FY 2021 Plans:*** N/A ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:*** N/A	0.200 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: TWTS: Test and Evalution ***Articles:*** ***FY 2021 Plans:*** - Complete NGT testing events. - Continue LRS FoS (formerly LOS-R) testing to include initiation of MRC Radio Frequency capability. ***FY 2022 Base Plans:*** - Continue LRS FoS testing and initiate test and evaluation efforts for Optical and TEAMS II capabilities. ***FY 2022 OCO Plans:***	0.562 -	0.580 -	0.875 -	0.000 -	0.875 -

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.295M from FY 2021 to FY 2022 is due to increase testing efforts related to Optical and TEAMS II capabilities.					
Title: TWTS: Management Services	0.067	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Title: TWTS Product Develeopment	0.124	0.435	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: -Initiate support of technology scouting, prototype development, and evaluation support for TWTS programs.					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: TWTS decrease of $0435M from FY 2021 to FY 2022 is due technology scouting and prototype development effort will be complete.					
Title: COC: Product Development	1.608	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans:					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A ***FY 2022 OCO Plans:*** N/A					
Title: COC: Management Services ***Articles:*** ***FY 2021 Plans:*** N/A ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:*** N/A	1.000 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	11.334	14.469	15.065	0.000	15.065

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/4633-1: *TCM*	150.101	264.421	291.671	-	291.671	-	-	-	-	-	-
• PMC/4631-1: *NOTM*	51.373	26.236	53.834	-	53.834	-	-	-	-	-	-
• PMC/4633-2: *WSATCOM (formerly VSAT)*	24.186	14.602	17.511	-	17.511	-	-	-	-	-	-
• PMC/4633-3: *SMART-T*	0.000	1.552	0.821	-	0.821	-	-	-	-	-	-
• PMC/4633-4: *TWTS*	28.567	53.314	167.161	-	167.161	-	-	-	-	-	-
• PMC/4631-2: *COC*	8.440	0.004	0.000	-	0.000	-	-	-	-	-	-
• PMC/4633-5: *WSATCOM MCWS-X MTA Funding*	20.432	0.200	0.000	-	0.000	-	-	-	-	-	-

Remarks

PMC 4633-5 WSATCOM FY 2020 - FY 2021 totaling $20.632M reflects funding associated with WSATCOM MCWS-X Middle Tier Acquisition (MTA) for rapid fielding.

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D. Acquisition Strategy

Tactical Communications Modernization (TCM): TCM will maximize the use of non-developmental radio solutions to meet the next generation of Marine Corps tactical radio requirements. The Mobile User Objective System (MUOS) testing at contracted government test labs to include environmental, shock, electromagnetic compatibility, and interoperability testing until full capability is completed. The Multi Channel Radios (MCR) Family of Systems (FoS) is an evolutionary program that will field non-developmental software defined radios (SDR) to meet the National Security Agency's (NSA) Communications Security Modernization end of Calendar Year 2024 deadline. Multi-Channel Radio Family of Systems, consists of the Multi Channel Hand Held (MCHH) and Multi-Channel Man-Pack (MCMP) systems. The MCHH system will be openly competed for Contract Award estimated in September 2021. RFP was released to industry in Mar 2021. The MCMP system procurement has been delayed to allow industry to resolve catastrophic heating issued that were discovered in testing, causing both a safety and performance risk. Anticipated procurement of this capability to be 2QFY22 to meet COMSEC modernization by 1QFY25.

Networking on the Move (NOTM): NOTM will use an evolutionary acquisition strategy that leverages Commercial-Off-The-Shelf (COTS) and Government-Off-The-Shelf (GOTS) technology to procure, sustain, and meet emerging requirements. The design of the system provides for internal growth capability through an open system architecture enabling technology refresh to extend the system's life, maintain interoperability, Information Assurance (IA) compliance, and reduce costs due to Diminishing Manufacturing Sources and Material Shortages (DMSMS). It is envisioned that technology refresh will occur on the NOTM hardware and software periodically due to component obsolescence, user-driven requests for improvements, IA compliance, and mission-related requirements. Refresh will include investments to incorporate evolving capabilities to ensure compatibility with other systems, create lighter and more efficient equipment, and keep pace with evolving software requirements. End-of-life equipment refresh is expected throughout the program's life cycle and may be managed through kit purchases, replacement through Engineering Change Proposals (ECPs), or as replacement parts as equipment is repaired.

Wideband Satellite Communications (WSATCOM)(formerly VSAT): The VSAT Family of Systems (FoS) was fielded over 10 years and as a result, many subcomponents have reached End-of-Life/End-of-Sale (EoL/EoS). The WSATCOM acquisition strategy leverages Commercial-Off-The-Shelf (COTS) technology to keep the systems relevant and capable. The design of Marine Corps Wideband Satellite (MCWS) is intended to be scalable and utilize like subcomponents to minimize sustainment costs and equipment readiness issues. The MCWS-Expeditionary (MCWS-X) variant in FY 2021 will provide a man-packable, lighter, smaller, and more capable terminal. Refreshes will be required periodically through the life of the program due to equipment obsolescence, user requirements, and IA compliance, which will be conducted through the Engineering Change Proposal (ECP) process.

Secure Mobile Anti-Jam Reliable Tactical-Terminal (SMART-T): SMART-T is an Army led, ACAT II program. The Marine Corps SMART-T has fielded the full Authorized Acquisition Objective (AAO) of 42 terminals and 35 AN/PSQ-17 Network Planning tools and completed the Advanced Extremely High Frequency (AEHF) upgrades. The SMART-T Project Office will procure non developmental items utilizing an Army contract to mitigate obsolescence, Diminishing Manufacturing Sources and Material Shortages (DMSMS), and components whose warranty has expired. This strategy will continue until a NEXGEN AEHF solution is identified.

Terrestrial Wideband Transmission Systems (TWTS): TWTS is a portfolio that provides the Fleet Marine Force with the capabilities of secure Beyond Line of Sight (BLOS) and Line of Sight (LOS) terrestrial digital data transmission. The BLOS capability will be provided by the Next Generation Troposcatter (NGT) which is currently in the Engineering and Manufacturing Development Phase. NGT procurements for testing and fielding will be made through the Marine Corps FFP contract awarded in Q1 FY 2020. The LOS capability will be provided by the Line-of-Sight Radio System Family of Systems (LRS FoS) which is being purchased through an Army contract

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

and will begin fielding in FY 2021. NGT and LRS are both Leading Readiness Indicators for the Marine Corps Force Design Effort supporting the conduct of Command and Control in a degraded environment. The LOS capability also includes an optical communications system which was recently designated as an acquisition program.

Combat Operations Center (COC): The COC AN/TSQ-239 (V)1-4 is the foundation of USMC Command and Control (C2), meeting near term communications and network requirements across the OpFor. There is a continuing developmental effort to evolve the COC into a fully integrated MAGTF C2 capability to maintain industry standard and interoperability with disparate C2 systems across the joint forces. COC program office will begin developing a design for a update to the current COC configuration called Next Generation Operational Facility (OPFAC) to begin fielding in FY 2023. The Next Generation OPFAC will provide the MAGTF with a more agile and modular COC capability to better support future Expeditionary Advanced Based Operations (EABO) that require a smaller physical presence. In FY 2021 the Combat Operations Center (COC) requirements transitions into the Combat Data Network (CDN) program PE 0206313 Project 2276 under the title Common Hosting Environment (CHE).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TCM JENM Development	SS/CPFF	ARL : Aberdeen, MD	4.563	1.120	Feb 2020	1.139	Feb 2021	1.064	Feb 2022	-		1.064	-	-	-
TCM FoS LCCEs	C/IDIQ	MCSC : Quantico, VA	0.110	0.100	Jul 2020	0.135	Jul 2021	0.135	Jul 2022	-		0.135	-	-	-
NOTM Development	C/CPFF	NIWC-LANT : Charleston, SC	5.774	0.225	Feb 2020	1.910	Dec 2020	3.900	Dec 2021	-		3.900	-	-	-
NOTM Development	WR	NIWC-Pacific : San Diego, CA	3.142	0.000		1.910	Dec 2020	0.241	Dec 2021	-		0.241	-	-	-
NOTM Development/ Enhancement	C/CPFF	NIWC-Pacific : San Diego, CA	0.000	0.000		0.000		0.360	Dec 2021	-		0.360	-	-	-
NOTM Product Development	WR	NIWC-Crane : Crane, IN	0.000	0.795	Jan 2020	0.000		0.000		-		0.000	-	-	-
WSATCOM/VSAT GUI Development	C/FFP	CECOM : Aberdeen, MD	1.633	0.468	Jun 2020	0.558	Jun 2021	0.000		-		0.000	-	-	-
WSATCOM/VSAT MCWS-L Test Asset	TBD	TBD : TBD	0.000	0.000		0.000	Feb 2021	0.000		-		0.000	-	-	-
COC	WR	NIWC-LANT : Charleston, SC	0.000	0.608	May 2020	0.000		0.000		-		0.000	-	-	-
COC	C/CPIF	NIWC-LANT : Charleson, SC	0.000	1.000	May 2020	0.000		0.000		-		0.000	-	-	-
TWTS Development	C/FFP	MCSC : Quantico	0.000	0.124	May 2020	0.435	May 2021	0.000		-		0.000	-	-	-
Prior Years Cumulative Funding	Various	Various : Various	23.709	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	38.931	4.440		6.087		5.700		-		5.700	-	-	N/A

Remarks

Product Development: Decrease of $0.387M from FY 2021 to FY 2022 largely due to fair share cost reduction of JENM and MCWS L/H acquisition strategy change.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TCM Engineering Support	Various	MCSC : Quantico, VA	0.661	0.117	May 2020	0.349	May 2021	0.356	May 2022	-		0.356	-	-	-
WSATCOM/VSAT Engineering Support	WR	NIWC-PAC : San Diego, CA	0.985	0.201	Feb 2020	0.833	Feb 2021	0.521	Feb 2022	-		0.521	-	-	-
SMART-T Engineering Support 2	WR	NIWC-PAC : San Diego, CA	0.021	0.000		0.030	Dec 2020	0.000		-		0.000	-	-	-
TWTS Program Management Support	Various	MCSC : Quantico, VA	2.399	0.200	May 2020	0.000		0.000		-		0.000	-	-	-
Prior Years Cumulative Funding	Various	Various : Various	4.640	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	8.706	0.518		1.212		0.877		-		0.877	-	-	N/A

Remarks

Support: Decrease of $0.335M from FY 2021 to FY 2022 due to completed ECP's and IA efforts.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TCM FoS Test Activities and Support	TBD	TBD : TBD	3.598	1.208	Aug 2020	3.271	Aug 2021	2.638	Aug 2022	-		2.638	-	-	-
TCM T&E Support	MIPR	DTIC : Fort Belvoir, VA	0.704	0.720	Mar 2020	0.302	Mar 2021	0.749	Nov 2021	-		0.749	-	-	-
TCM FoS Test Assets	C/IDIQ	PRP : San Diego, CA	1.433	0.965	Feb 2020	1.885	Mar 2021	0.686	Mar 2022	-		0.686	-	-	-
NOTM Vehicle Integration Testing	WR	NIWC-LANT : Charleston, SC	4.196	0.000		0.124	Dec 2020	0.000		-		0.000	-	-	-
NOTM Test and Eval	C/CPFF	NIWC-PAC : San Diego, CA	0.000	0.000		0.000		1.193	Jan 2022	-		1.193	-	-	-
NOTM Test and Eval	C/CPFF	MCTSSA : Camp Pendleton, CA	0.000	0.000		0.000		0.010	Jan 2022	-		0.010	-	-	-
NOTM Test & Eval	WR	NIWC-PAC : San Diego, CA	0.000	0.000		0.150	Dec 2020	0.306	Nov 2021	-		0.306	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NOTM T&E	C/CPFF	NIWC-LANT : Charleston, SC	0.000	0.000		0.150	Feb 2021	1.012	Nov 2021	-		1.012	-	-	-
WSATCOM/VSAT Testing	MIPR	NAWCAD : Patuxent River, MD	0.382	1.270	Apr 2020	0.000		0.000		-		0.000	-	-	-
WSATCOM/VSAT Testing	MIPR	TBD : TBD	0.302	0.000		0.000		0.000		-		0.000	-	-	-
TWTS T&E Support	C/FFP	Dept. of Human Health and Services : Rockville, MD	1.735	0.562	Mar 2020	0.000		0.000		-		0.000	-	-	-
TWTS ECP Testing	WR	NIWC-LANT : Charleston, SC	0.118	0.000		0.000	Nov 2020	0.000		-		0.000	-	-	-
TWTS T&E Support	C/FFP	MCSC : Quantico	0.000	0.000		0.580	Jun 2021	0.875	Mar 2022	-		0.875	-	-	-
Prior Years Cumulative Funding	Various	Various : Various	23.084	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	35.552	4.725		6.462		7.469		-		7.469	-	-	N/A

Remarks

Test and Evaluation: Increase of $1.007M from FY 2021 to FY 2022 largely due to NOTM test and evaluation efforts related to prototype SATCOM and network management tools/upgrades.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TCM Engineering Support	FFRDC	US Army, MITRE : Stafford, VA	1.625	0.529	Mar 2020	0.394	Aug 2021	0.924	Jan 2022	-		0.924	-	-	-
NOTM Engineering Support	FFRDC	US Army, MITRE : Stafford, VA	0.372	0.000		0.000		0.000		-		0.000	-	-	-
WSATCOM/VSAT Engineering Support 1	FFRDC	US Army, MITRE : Stafford, VA	6.113	0.055	Feb 2020	0.247	Feb 2021	0.095	Feb 2022	-		0.095	-	-	-
SMART-T Engineering Support	FFRDC	US Army, MITRE : Stafford, VA	0.508	0.000		0.067	Dec 2020	0.000		-		0.000	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TWTS Engineering Support	FFRDC	US Army, MITRE : Stafford, Va	1.231	0.067	Sep 2020	0.000		0.000		-		0.000	-	-	-
COC Engineering Support	FFRDC	US Army, MITRE : Stafford, VA	0.164	1.000	Feb 2020	0.000		0.000		-		0.000	-	-	-
Prior Years Cumulative Funding	FFRDC	US Army, MITRE : Stafford, VA	6.582	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	16.595	1.651		0.708		1.019		-		1.019	-	-	N/A

Remarks

Management Support: Increase of $0.311M from FY 2021 to FY 2022 largely due to additional TCM MITRE support.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	99.784	11.334		14.469		15.065		-		15.065	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

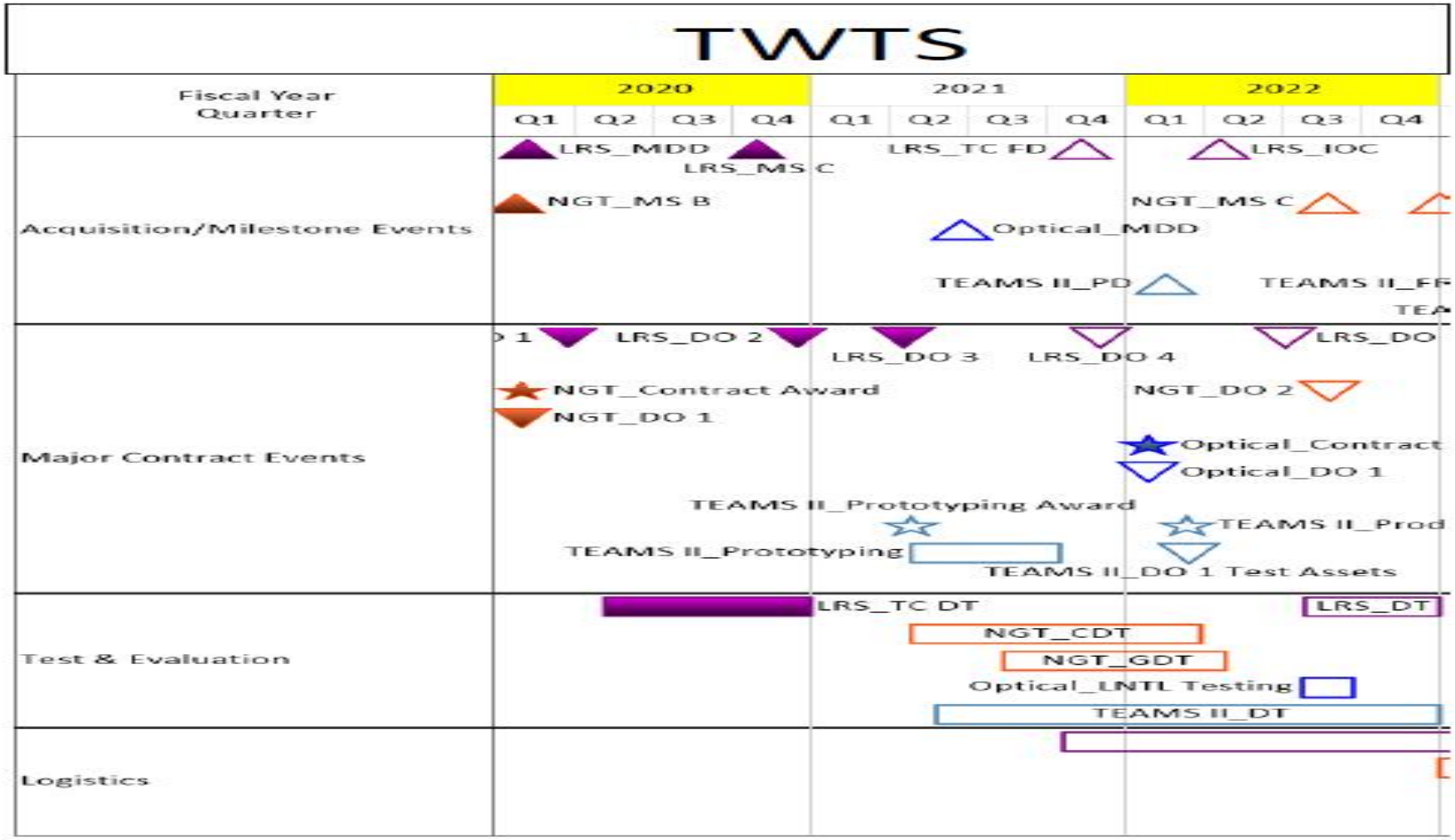


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

SECURE, MOBILE, ANTI-JAM, RELIABLE, TACTICAL-TERMINAL (SMART-T)

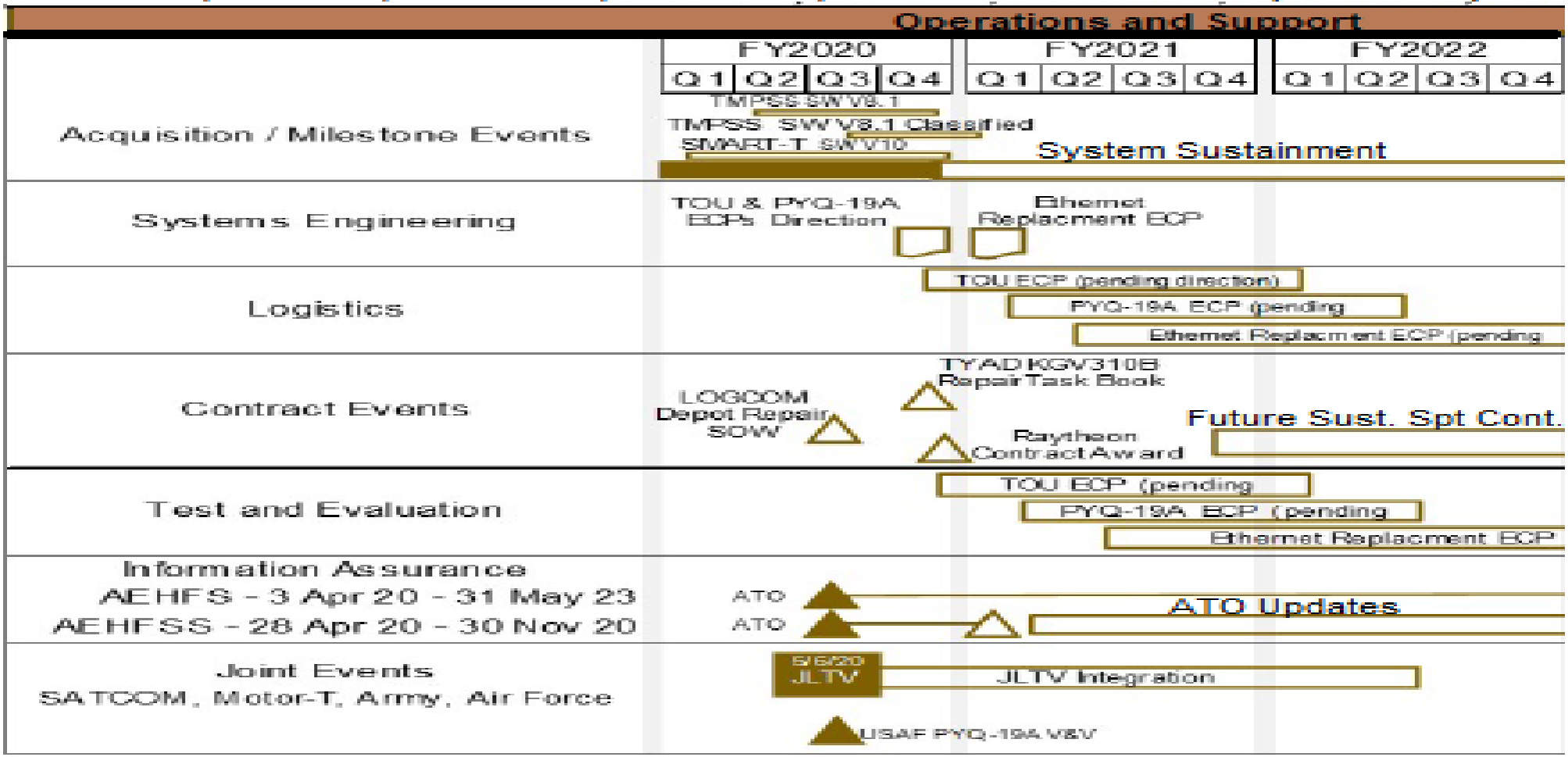
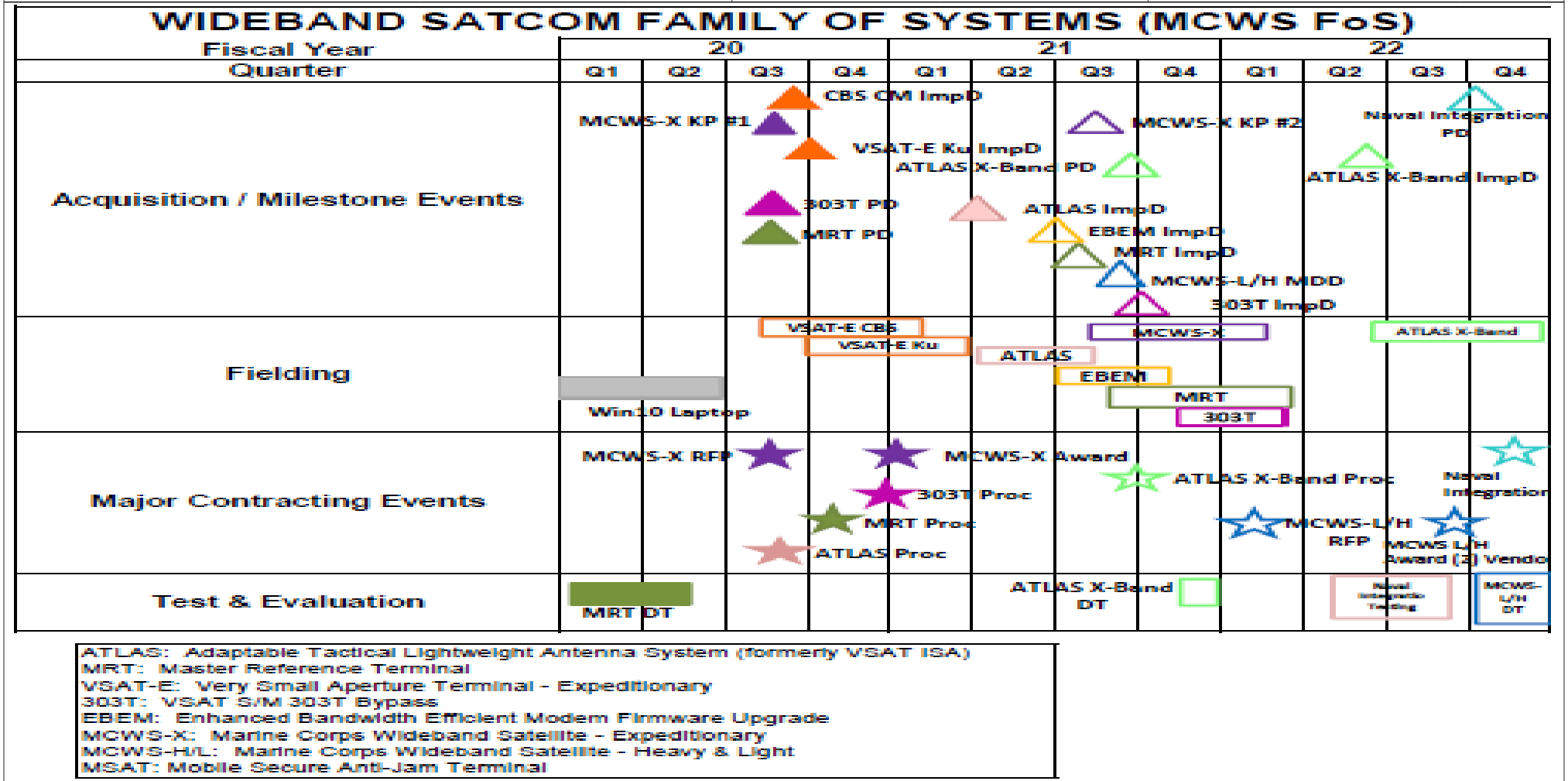


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*



ATLAS: Adaptable Tactical Lightweight Antenna System (formerly VSAT ISA)
MRT: Master Reference Terminal
VSAT-E: Very Small Aperture Terminal - Expeditionary
303T: VSAT S/M 303T Bypass
EBEM: Enhanced Bandwidth Efficient Modem Firmware Upgrade
MCWS-X: Marine Corps Wideband Satellite - Expeditionary
MCWS-H/L: Marine Corps Wideband Satellite - Heavy & Light
MSAT: Mobile Secure Anti-Jam Terminal

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

TCM – MBR II

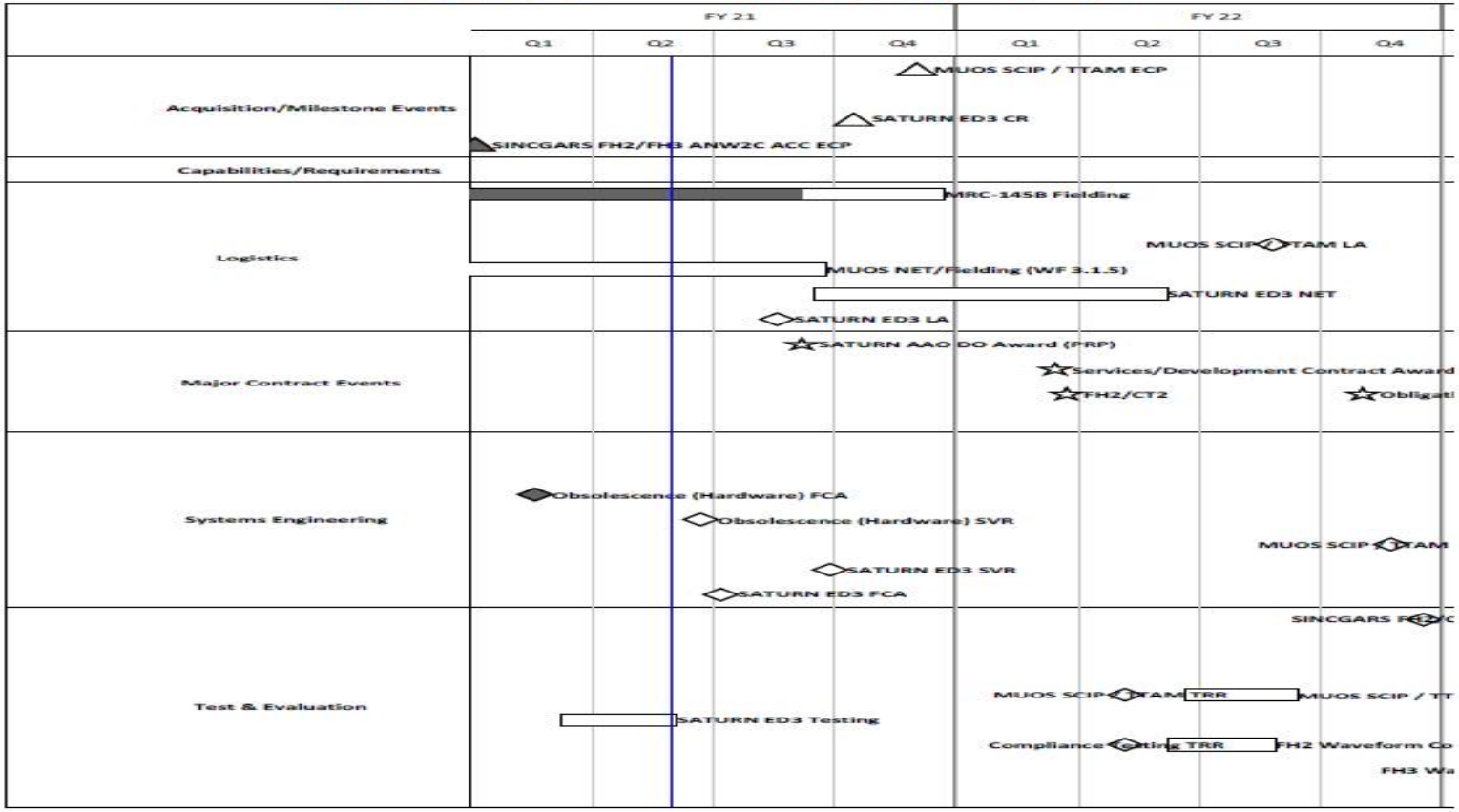


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

TCM – HFR II

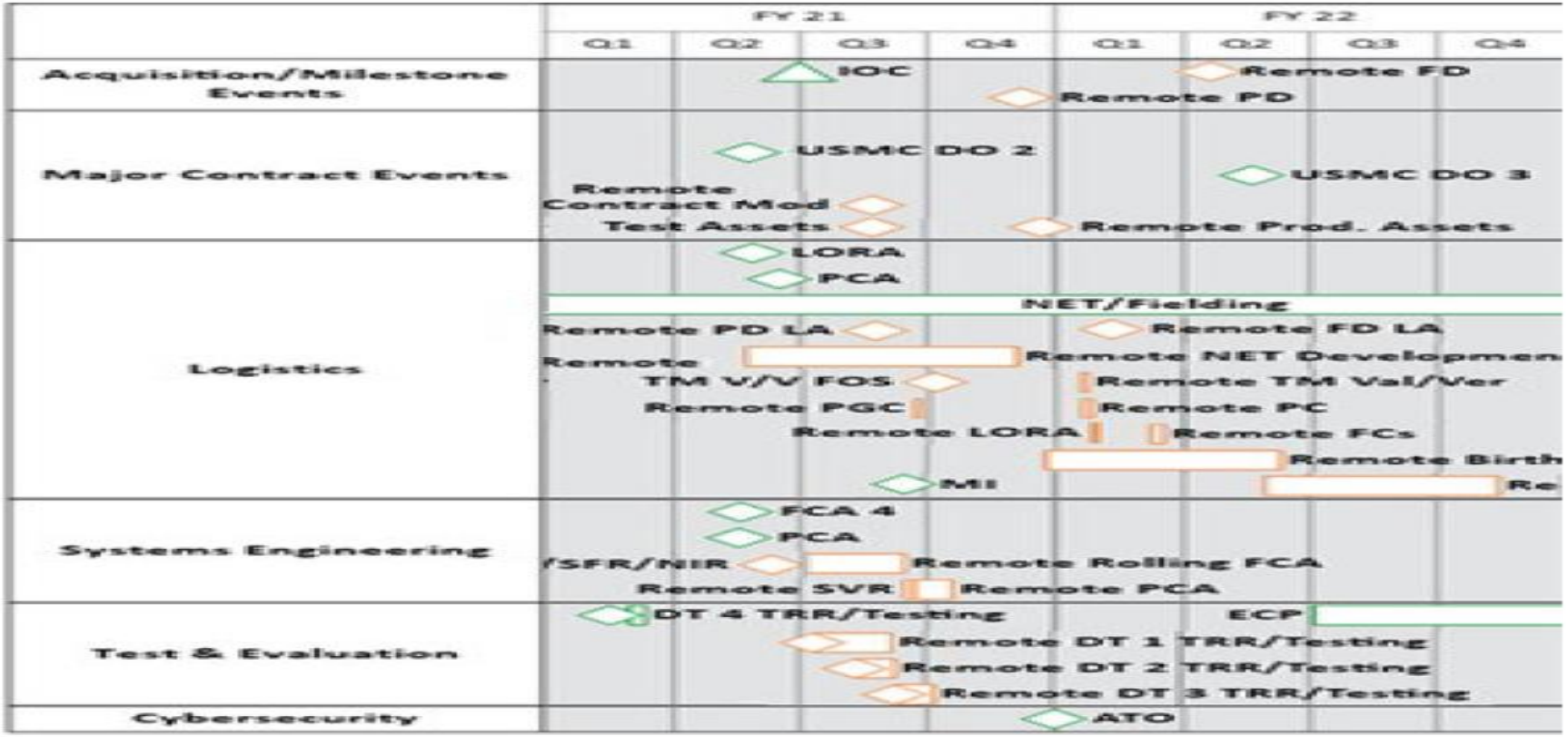


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

TCM - MCMP

	FY21				FY22			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Acquisition/Milestone Events								
Systems Engineering					PSPEC			
Logistics								
Major Contract Events						RFP Release ☆		
Test and Evaluation								
Cost								
Cybersecurity								

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

TCM – MCHH

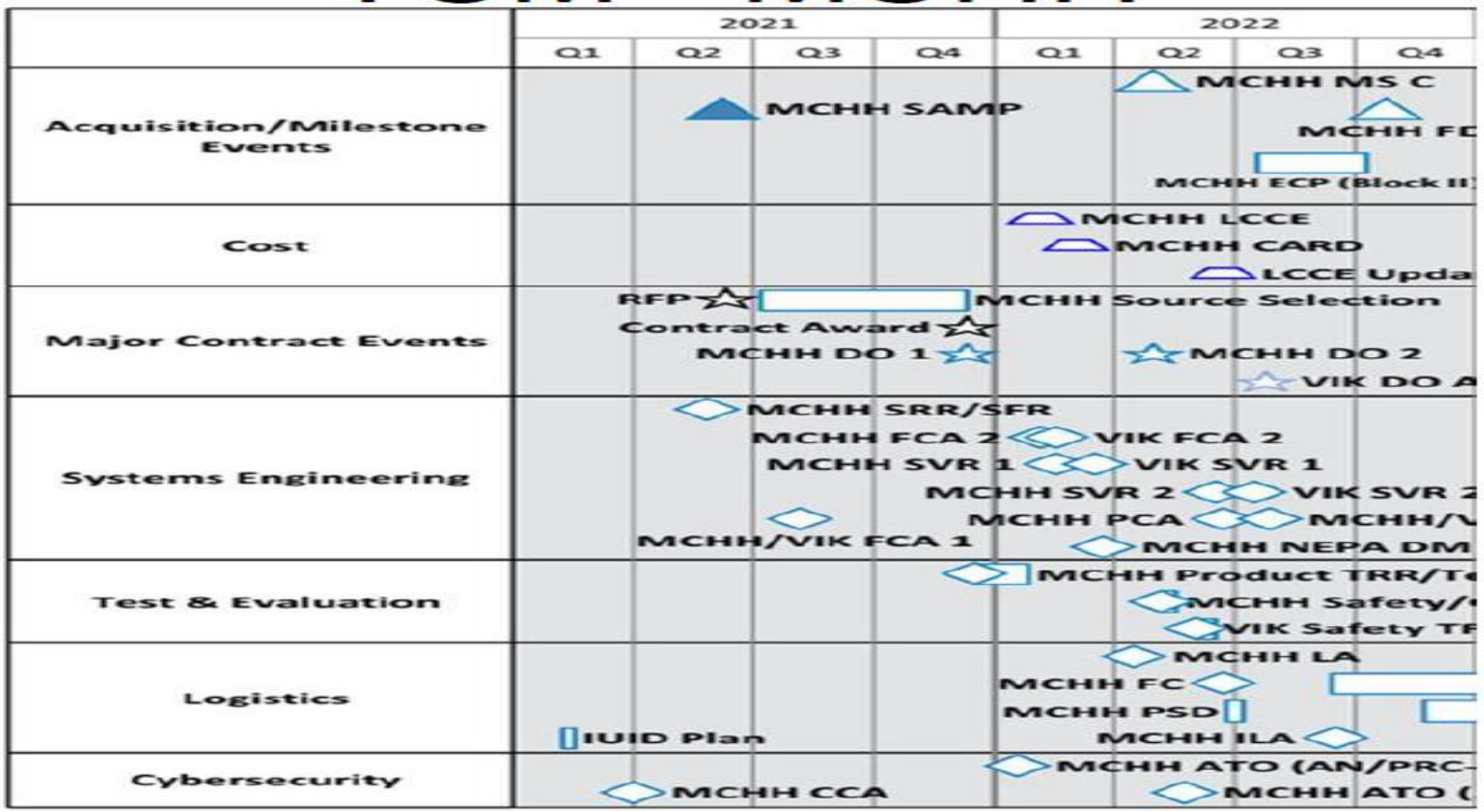


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

NOTM FY20-22

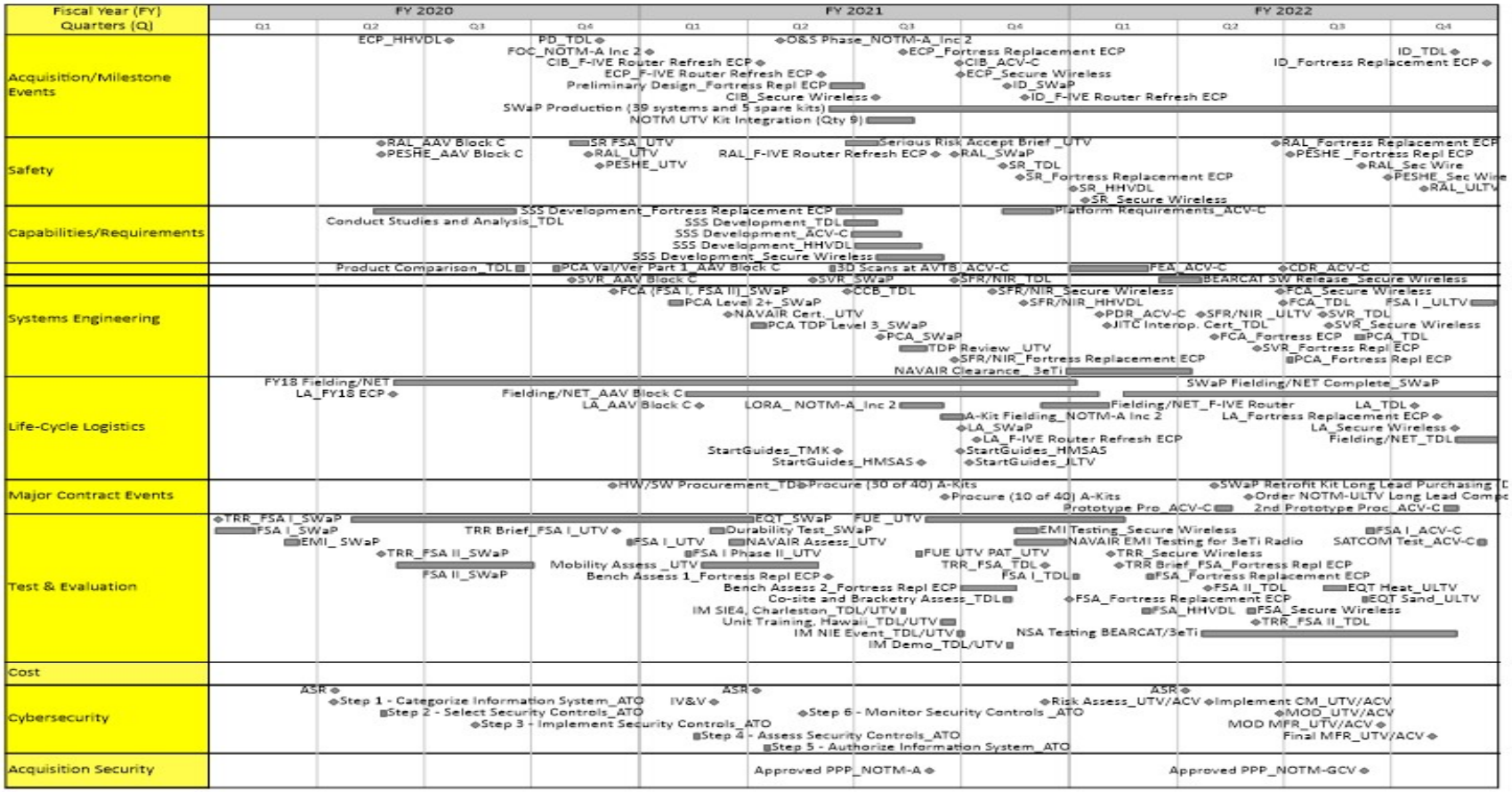


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2275				
TCM HFR II MP Fielding Decision (FD)	2	2020	2	2020
TCM HFR II Contract Award (CA) Delivery Order (DO) #1	2	2020	2	2020
TCM HFR II DO #2	2	2021	2	2021
TCM HFR II Initial Operating Capability (IOC)	1	2022	1	2022
TCM HFR II DO #3	2	2022	2	2022
TCM MCHH Contract Award DO #1	4	2021	4	2021
TCM MCHH Procurement Decision (PD)	3	2021	3	2021
TCM MCHH VIK PD	1	2022	1	2022
TCM MCHH FD	2	2022	2	2022
TCM MCHH DO #2	3	2022	3	2022
TCM MCHH IOC	4	2022	4	2022
TCM MCHH VIK FD	4	2022	4	2022
TCM MCMP PD VRC	4	2022	4	2022
WSATCOM/VSAT MRT Fielding	3	2021	1	2022
WSATCOM/VSAT MRT Implementation Decision	3	2021	3	2021
WSATCOM/VSAT MCWS-X Procurement	4	2020	4	2020
WSATCOM/VSAT MCWS-L/H Test Asset Procurement	4	2021	4	2021
WSATCOM/VSAT MCWS-X Fielding Decision (KP#2)	3	2021	3	2021
SMART-T KGV310B Repair	4	2020	4	2020
SMART-T Raytheon Contract Award	4	2020	4	2020
NOTM-A FOC	1	2021	1	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
TWTS NGT Testing	2	2021	1	2022
TWTS TEAMS II Prototype Testing	2	2021	4	2021
TWTS TEAMS II Development Testing	2	2022	4	2022
TWTS LRS MRC Testing	3	2022	4	2022
TWTS Optical Contract Award	1	2022	1	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 2276 / *Comms Switching and Control Sys*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2276: *Comms Switching and Control Sys*	48.130	1.710	4.749	1.536	-	1.536	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

(U) Combat Data Network (CDN), formerly Data Distribution System - Modular (DDS-M): The CDN provides the commander a modular, integrated, and interoperable Internet Protocol (IP) - based Local Area Network (LAN) and Wide Area Network (WAN) capability that forms the data communications backbone to tactical organizations within a Marine Air-Ground Task Force (MAGTF). The CDN provides an extension of the Defense Information System Network (DISN), Secret Internet Protocol Router Network (SIPRNet), Non-secure Internet Protocol Router Network (NIPRNet) as well as a coalition networking. The CDN provides Marine Corps maneuver elements with a modular and scalable IP data transport capability by providing computers, servers, routers, data switches, cabling, multiple connections to various tactical transmission devices, contains integral In-line Network Encryption (INE) device supporting IP Security (IPSec), and Virtual Private Networking (VPN). CDN is currently designated as the Common Hosting Environment (CHE) for tactical networking. CHE will consolidate like capabilities from various programs of record, primarily server capacity and network access switching, under a single program of record. CHE will simplify the equipment string and will help reduce the overall Size, Weight, and Power (SWaP) requirements for the MAGTF. In FY 2021 the Combat Operations Center (COC) requirements PE 0206313 Project 2275 transitions into the Combat Data Network (CDN) program under the title Common Hosting Environment (CHE).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: CDN: Product Development	0.575	3.001	0.538	0.000	0.538
Articles:	-	-	-	-	-
Description: CDN Product Development: Funds support Engineering Change Proposals (ECP) for systems tech refresh on a three to five year cycle while in sustainment.					
FY 2021 Plans: - Initiate development activities associated with Common Hosting Environment (CHE) virtualization efforts and incorporation of cloud based technologies. - Continue development of required hardware upgrades to include routers and servers. Development effort will focus on integration and testing of improved versions of existing components.					
FY 2022 Base Plans: - Continue development activities associated with Common Hosting Environment (CHE) virtualization efforts and incorporation of cloud based technologies.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2276 / *Comms Switching and Control Sys*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue development of required hardware upgrades to server hardware to support cloud. Development effort will focus on continued integration and testing of improved versions of existing components. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Product Development decrease of $2.463M from FY 2021 to FY 2022 reflects a decrease in the router development activity and focus shifting to enterprise cloud based hardware technology to host CHE.					
Title: CDN: Test and Evaluation ***Articles:*** ***Description:*** CDN Test and Evaluation: Funds support acquisition testing for system technology refresh on a three to five year cycle while in sustainment. ***FY 2021 Plans:*** - Initiated support for joint interoperability test certification efforts demonstrated through DoD Interoperability Communication Exercises for Common Hosting Environment (CHE) virtualization efforts and incorporation of cloud based technologies. ***FY 2022 Base Plans:*** - Continue support for joint interoperability test certification efforts demonstrated through DoD Interoperability Communication Exercises for Common Hosting Environment (CHE) virtualization efforts and incorporation of cloud based technologies. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Test and Evaluation decrease of $0.548M from FY 2021 to FY 2022 reflects a decrease in the router effort and focus shifting to enterprise cloud based hardware technology to host CHE.	0.450 -	1.111 -	0.563 -	0.000 -	0.563 -
Title: CDN: Management Services ***Articles:*** ***Description:*** CDN Management Services: Funds support Federally Funded Research and Development Contracts for systems tech refresh on a three to five year cycle while in sustainment.	0.685 -	0.637 -	0.435 -	0.000 -	0.435 -

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
FY 2021 Plans: - Initiated Network Optimization and reconfiguration efforts to upgrade Voice over Internet Protocol (VoIP) and Information Assurance Modules (IPS/Firewalls). ***FY 2022 Base Plans:*** - Continue Network Optimization and reconfiguration efforts to upgrade Voice over Internet Protocol (VoIP) and Information Assurance Modules (IPS/Firewalls) to implement fully virtual applications running within the Common Hosting Environment (CHE). ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Management Services decrease of $0.202M from FY 2021 to FY 2022 reflects reduction of CDN upgrades to system routers and servers.					
Accomplishments/Planned Programs Subtotals	1.710	4.749	1.536	0.000	1.536

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/4634/A: *CDN*	22.740	29.057	48.574	-	48.574	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

(U) Combat Data Network (CDN), formerly Data Distribution System - Modular (DDS-M): CDN will maximize use of existing COTS, GOTS, and GFE. CDN hardware and software will continue to be upgraded and improved as technology advances. Major focus will be on interoperability and compatibility with existing systems and components in the Marine Corps, as well as Joint and Coalition forces. R&D effort will focus on integration and testing of improved versions of existing components. CDN may reuse other Services' development and utilize external contracts that satisfy requirements and analysis of alternatives. R&D effort will focus on implementation of the Common Hosting Environment (CHE) which will lead to the ability to transition to cloud technologies.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CDN Development Efforts	WR	NIWC-LANT : Charleston, SC	1.080	0.575	May 2020	3.001	Feb 2021	0.538	Feb 2022	-		0.538	-	-	-
Prior Year Cumulative Funding	Various	Various : Various	30.590	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	31.670	0.575		3.001		0.538		-		0.538	-	-	N/A

Remarks

Product Development decrease of $2.463M from FY 2021 to FY 2022 affects CDN development activities associated with Common Hosting Environment (CHE) virtualization efforts and incorporation of cloud based technologies.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Cumulative Funding	Various	Various : Various	5.696	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	5.696	0.000		0.000		0.000		-		0.000	-	-	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CDN Testing	WR	NIWC Pacific : San Diego, CA	0.981	0.000		1.111	Mar 2021	0.563	Mar 2022	-		0.563	-	-	-
CDN Integration testing	WR	JITC : Ft. Huachuca, AZ	0.171	0.090	Jan 2020	0.000		0.000		-		0.000	-	-	-
CDN Testing	C/FFP	NAWC-AD : Patuxent River, MD	0.296	0.360	Mar 2020	0.000		0.000		-		0.000	-	-	-
Prior Year Cumulative Funding	Various	Various : Various	1.969	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	3.417	0.450		1.111		0.563		-		0.563	-	-	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Test and Evaluation decrease of $0.548M from FY 2021 to FY 2022 reflects a decrease in the router effort and focus shifting to enterprise cloud based hardware technology to host CHE.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CDN	FFRDC	MITRE : Stafford, VA	1.815	0.685	Dec 2019	0.637	Dec 2020	0.435	Dec 2021	-		0.435	-	-	-
Prior Year Cummulative Funding	FFRDC	MITRE : Stafford, VA	5.532	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	7.347	0.685		0.637		0.435		-		0.435	-	-	N/A

Remarks

Management Services decrease of $0.202M from FY 2021 to FY 2022 reflects reduction of CDN upgrades to system routers and servers.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	48.130	1.710		4.749		1.536		-		1.536	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2276 / *Comms Switching and Control Sys*

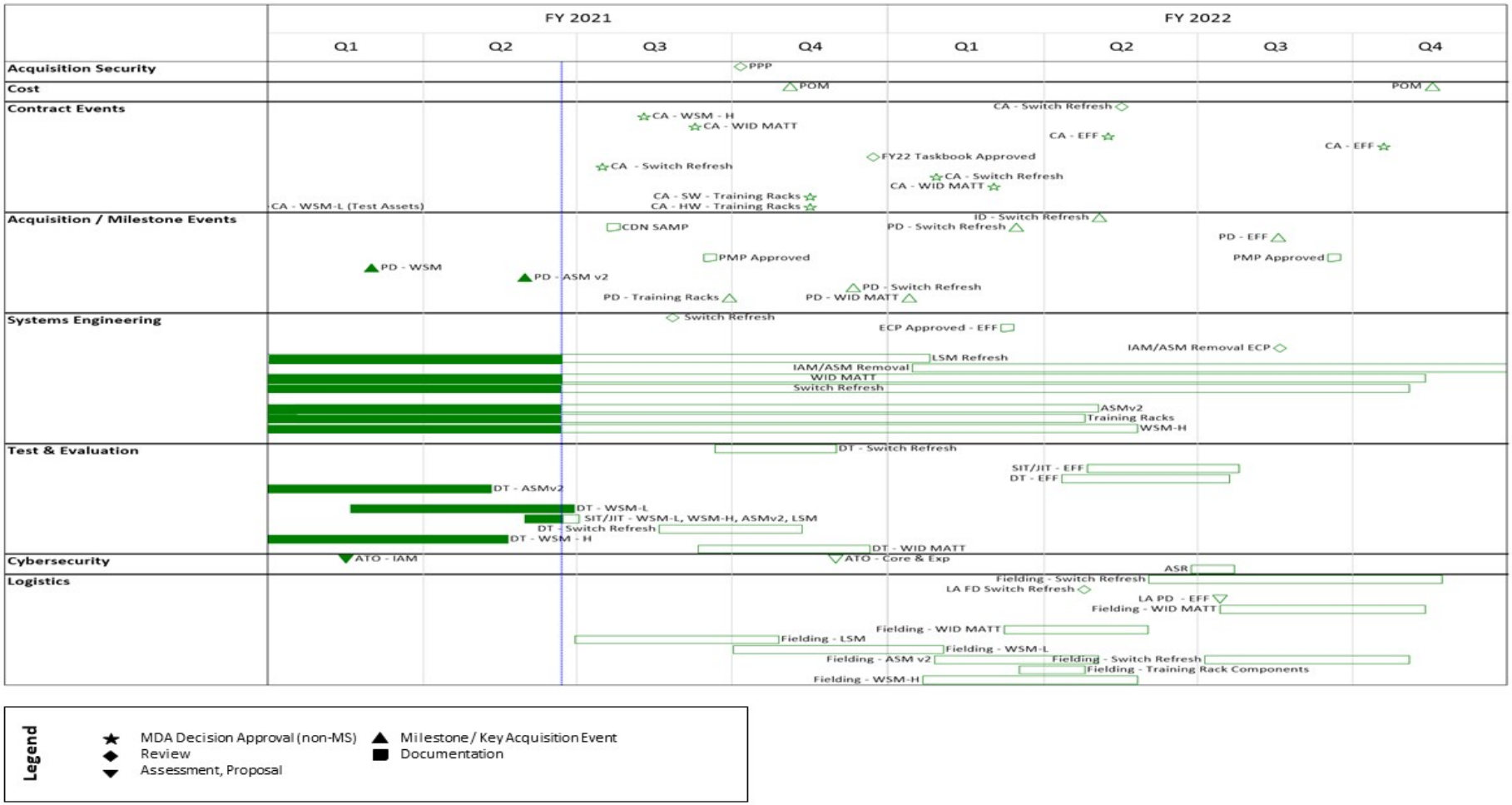

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2276 / *Comms Switching and Control Sys*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2276				
CDN WSM-L Test & Evaluation	1	2021	2	2021
CDN WSM-L Fielding Decision	4	2021	4	2021
CDN WSM-H Test & Evaluation	1	2021	2	2021
CDN WSM-H Fielding Decision	3	2021	3	2021
CDN Switch Refresh Contract Award (Base)	3	2021	3	2021
CDN Switch Refresh Test & Evaluation	3	2021	4	2021
CDN Switch Refresh Contract Award (Option)	2	2022	2	2022
CDN Switch Refresh Fielding Decision	2	2022	2	2022
CDN WID MATT (Base)	3	2021	3	2021
CDN WID MATT Test & Evaluation	3	2021	4	2021
CDN WID Fielding Decision	3	2021	3	2021
CDN WID MATT (Option)	1	2022	1	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy												Date: May 2021
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*				Project (Number/Name) 2277 / *System Engineering and Integration*			
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
2277: *System Engineering and Integration*	39.955	4.876	2.627	1.909	-	1.909	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides funds for engineering, test, and evaluation activity, which ensures that the systems being developed within the Program Element (PE) employ consistent standards for interoperability and to the maximum extent feasible use of hardware and software which is uniform and standard across programs.

Expeditionary Energy Office (E2O): Energy is a top priority for the USMC and one of the six pillars of Modernization for the Corps identified by the Commandant. The Commandant established the USMC Expeditionary Energy Office (E2O), with the mission to analyze, develop, and direct the Marine Corps' energy strategy in order to optimize expeditionary capabilities across all warfighting functions. E2O's role is to advise the Marine Requirements Oversight Council (MROC) on all energy and resource related requirements, acquisitions, and programmatic decisions. This office and funding directly support execution of the USMC Expeditionary Energy Strategy and Implementation Plan, and priorities identified in the USMC Expeditionary Energy Water and Waste Initial Capabilities Document/Capabilities Based Assessment, as well as Science and Technology (S&T) Objectives identified in the 2012 USMC S&T Strategic Plan. The Marine Corps program aligns with the Commandant's Planning Guidance, the National Defense Authorization Act, DoD directives and SECNAV goals. This funding will support the achievement of the Strategy, and the activities of the USMC Expeditionary Energy Concepts process, managed by the E2O.

Joint Interoperability of Tactical Command and Control Systems (JINTACCS) is a Joint Chiefs-of-Staff (JCS)/DoD-mandated program for joint development, implementation, and testing of tactical data links and US Message Text Format (MTF) under the direction of the Defense Information Systems Agency (DISA) and Office of the Secretary of Defense/ Networks and Information Integration (OASD/NII) per the Commander Joint Chiefs of Staff (CJCSI) Instructions 6610.01E and CJCS16241.04 respectively. This effort also covers interoperability analyses, standardization, and testing of tactical message standards such as Link 16, Joint Range Extension Application Protocol (JREAP), and Variable Message Format (VMF) used between the Marine Corps and joint forces. Responsible for the development of Net Centric standards (XML, Web Services) to meet requirements of USMC/DoD/Coalition Net Centric Data Strategies. Efforts in this area include Marine Corps representation in tactical data link and tactical data message joint working groups and configuration control boards and application of the Interoperability Enhancement Process (IEP) across Marine Air Ground Task Force systems and platforms.

Systems Engineering, Integration and Coordination (SEIC) is MCSC Chief Engineer's systems engineering and integration program. SEIC provides the decision support tools and engineering analysis resources needed to assess, identify and resolve Marine Air Ground Task Force (MAGTF) inter-systems' SoS issues and challenges. SEIC supports DC CD&I, DC PP&O, DC A, DC I&L, DC M&RA, HQMC C4, and HQMC INT in the analysis, evaluation, and assessment of MAGTF Systems and SoS requirements. SEIC centralized management of Command, Control, Communications, Computers and Intelligence Surveillance and Reconnaissance (C4ISR) programs allows the implementation of systems engineering certification process in support of milestone decision approval; a requirements and functional analysis process enabling system of systems engineering and an overarching C4ISR systems architecture, and a product realization process to support budget decisions. SEIC

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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engineering conducts functional analyses for emergent system of systems challenges and ensures seamless integration and maximum interoperability of materiel across USMC, Naval, Joint, and DoD programs consistent with the Commandant's Vision and Strategy 2025.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Expeditionary Energy Office (E2O)	2.405	2.036	1.312	0.000	1.312
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue to support the USMC Expeditionary Energy Strategy and Implementation Plan, and priorities identified in the USMC Expeditionary Energy Water and Waste Initial Capabilities Document/Capabilities Based Assessment, as well as Science and Technology Objectives identified in strategic plans. E2O will invest in R&D programs to advance Strategy goals. Priority areas for investment include, but are not limited to: Fuel distribution, Energy harvesting, hybrid power, energy command and control data, energy storage, energy metering and monitoring decision tools. ***FY 2022 Base Plans:*** - Continue to support the USMC Expeditionary Energy Strategy and Implementation Plan, as well as the USMC Expeditionary Energy Water and Waste Initial Capabilities Document. - Continue and accelerate the support of fielding power and energy solutions for Expeditionary Advanced Base Operations (EABO). - Initiate user evaluation to support small unit power transition. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.713M from FY 2021 to FY 2022 reflects the reduction in scope to the battery based energy systems, small and expeditionary hybrid power systems, energy simulation tools, and Small Unit Power technology testing and user evaluation.					
Title: JINTACCS: JCS and DoD CIO Data Links Testing	0.557	0.590	0.596	0.000	0.596
Articles:	-	-	-	-	-
Description: Joint Interoperability of Tactical Command and Control Systems (JINTACCS) is a United States military program for the development and maintenance of tactical information exchange configuration items (CIs) and operational procedures. It was originated to ensure that the command and control (C2 and C3) and weapons systems of all US military services and NATO forces would be interoperable. MARCORSYSCOM Systems Engineering, Interoperability Architectures, and Technology direct the JINTACCS Program. Created					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
as a non-acquisition R&D engineering program it provides for critical engineering services in several areas. JINTACCS is essential to USMC development and maintenance of tactical data exchange standards (Link 16, VMF, MTF, etc.), maintenance of C2 systems interoperability issues, development of Net Centric standards (XML, Web Services) to meet requirements of DoD/USMC Net Centric Data Strategy, and participation in Marine Corps, Joint, and Coalition Interoperability Certification testing to DoD/JCS/USMC/NATO requirements in an ever-changing cyber environment. ***FY 2021 Plans:*** - Continue to provide Marine Corps representation at Tactical Data Link (TDL) and tactical data message working groups, Configuration Control Boards (CCBs), and other interoperability forums. Continue to assess and represent Marine Corps positions on TDL and tactical data message interface change proposals (ICPs), requests for exceptions (RFEs), and other initiatives. - Continue data collection and information dissemination associated with the Marine Corps Interoperability Enhancement Program (IEP). Enter system bit-level information into the eSMART tool; conduct interoperability assessments of MAGTF systems using the eSMART tool to highlight gaps and identify investment opportunities to meet emerging interoperability needs; provide feedback to JCS representatives concerning shortfalls or recommended improvements to the eSMART tool. - Continue to provide TDL subject matter expert support to Marine Corps Systems Command and Program Executive Office Land Systems programs to support test, certification, and modernization of Marine Corps capabilities. ***FY 2022 Base Plans:*** - Continue to provide Marine Corps representation at TDL and tactical data message working groups, CCBs, and other interoperability forums. Continue to assess and represent Marine Corps positions on TDL and tactical data message ICPs, RFEs, and other initiatives. - Continue data collection and information dissemination associated with the Marine Corps IEP. Enter system bit-level information into the eSMART tool; conduct interoperability assessments of MAGTF systems using the eSMART tool to highlight gaps and identify investment opportunities to meet emerging interoperability needs; provide feedback to JCS representatives concerning shortfalls or recommended improvements to the eSMART tool.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue to provide TDL subject matter expert support to Marine Corps Systems Command and Program Executive Office Land Systems programs to support test, certification, and modernization of Marine Corps capabilities ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.006M from FY 2021 to FY 2022 reflects inflation in costs of services (i.e. travel, analysis support, etc.) required to perform the program functions.					
Title: SEIC: Engineering and Technical Support	1.914	0.001	0.001	0.000	0.001
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue the integration of MAGTF C2 systems and C4 services with shipboard C2 architectures and C4ISR infrastructures in direct support of Marine Expeditionary Unit (MEU) deployments via Deploying Group Systems Integration Test (DGSIT). ***FY 2022 Base Plans:*** - Complete the integration of MAGTF C2 systems and C4 services with shipboard C2 architectures and C4ISR infrastructures in direct support of MEU deployments via Deploying Group Systems Integration Test (DGSIT). ***FY 2022 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	4.876	2.627	1.909	0.000	1.909

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/6054: *Expeditionary Energy Office (E2O)*	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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D. Acquisition Strategy

The System Engineering and Integration programs utilizes a non-traditional acquisition strategy. The program utilize the Naval Surface Warfare Centers for system engineering support services.

EEO - Expeditionary Energy Strategy and Implementation Plan, and priorities identified in the USMC Expeditionary Energy Water and Waste Initial Capabilities Document/Capabilities Based Assessment, as well as Science and Technology Objectives identified in the 2012 USMC S&T Strategic Plan. The program utilize the Naval Surface Warfare Centers for system engineering support services.

JINTACCS - Created as a non-acquisition R&D engineering program it provides for critical engineering services in several areas. (JINTACCS) is a United States military program for the development and maintenance of tactical information exchange configuration items (CIs) and operational procedures. It was originated to ensure that the command and control (C2 and C3) and weapons systems of all US military services and NATO forces would be interoperable. MARCORSYSCOM Systems Engineering Directorate, Integration Division directs the JINTACCS Program.

SEIC - Provides the decision support tools and engineering analysis resources needed to assess, identify and resolve Marine Air Ground Task Force (MAGTF) inter-systems' SoS issues and challenges. SEIC supports the Marine Corps in the analysis, evaluation, and assessment of MAGTF Systems and SoS requirements. The program utilize the Naval Surface Warfare Centers for system engineering support services.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	Various : Various	10.899	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	10.899	0.000		0.000		0.000		-		0.000	-	-	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MAGTF SEI&C	WR	NSWC : Dahlgren, VA	5.713	0.250	Nov 2019	0.001	Mar 2021	0.001	Mar 2022	-		0.001	-	-	-
MAGTF SEI&C	WR	NSWC : DAM NECK, VA	0.270	0.150	Dec 2019	0.000		0.000		-		0.000	-	-	-
MAGTF SEI&C	C/FP	MANTECH : Stafford, VA	1.295	1.514	Mar 2020	0.000		0.000		-		0.000	-	-	-
JINTACCS	C/FFP	MCTSSA : Camp Pendleton, CA	2.303	0.300	Mar 2020	0.306	Mar 2021	0.310	Mar 2022	-		0.310	-	-	-
JINTACCS	C/FFP	IEP Analysis : Quantico, VA	0.225	0.225	Jan 2020	0.225	Jan 2021	0.225	Jan 2022	-		0.225	-	-	-
Experimental Forward Operating Base (E2O)	WR	SSC PAC : San Diego, CA	2.912	0.554	Jan 2020	0.000		0.000		-		0.000	-	-	-
Experimental Forward Operating Base (E2O)	WR	Various : Various	2.148	0.520	Nov 2019	0.300	Nov 2020	0.000		-		0.000	-	-	-
Experimental Forward Operating Base (E2O)	WR	NSWC : Carderock	0.778	0.403	Nov 2019	0.330	Nov 2020	0.275	Nov 2021	-		0.275	-	-	-
Experimental Forward Operating Base (E2O)	WR	NAVFAC EXWC : Port Hueneme, CA	1.148	0.119	Feb 2020	0.250	Feb 2021	0.000		-		0.000	-	-	-
Experimental Forward Operating Base (E2O)	WR	NSWC : Panama City, FL	0.275	0.334	Nov 2019	0.000		0.275	Nov 2021	-		0.275	-	-	-
Experimental Forward Operating Base (E2O)	WR	NSWC : Crane, IN	0.901	0.000		0.412	Nov 2020	0.275	Nov 2021	-		0.275	-	-	-
Experimental Forward Operating Base (E2O)	C/FFP	DTIC : FT. Belvoir	0.075	0.075	Apr 2020	0.200	Apr 2021	0.075	Apr 2022	-		0.075	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Experimental Forward Operating Base (E2O)	WR	NSWC Dahlgreen : Dahlgren, VA	0.000	0.400	Mar 2020	0.344	Mar 2021	0.150	Mar 2022	-		0.150	-	-	-
Experimental Forward Operating Base (E2O)	WR	Naval Research Lab : Washington, DC	0.000	0.000		0.200	Apr 2021	0.262	Apr 2022	-		0.262	-	-	-
Prior Years Cumulative Funding	C/FFP	Various : Various	3.022	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	21.065	4.844		2.568		1.848		-		1.848	-	-	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	Various : Various	7.611	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	7.611	0.000		0.000		0.000		-		0.000	-	-	N/A

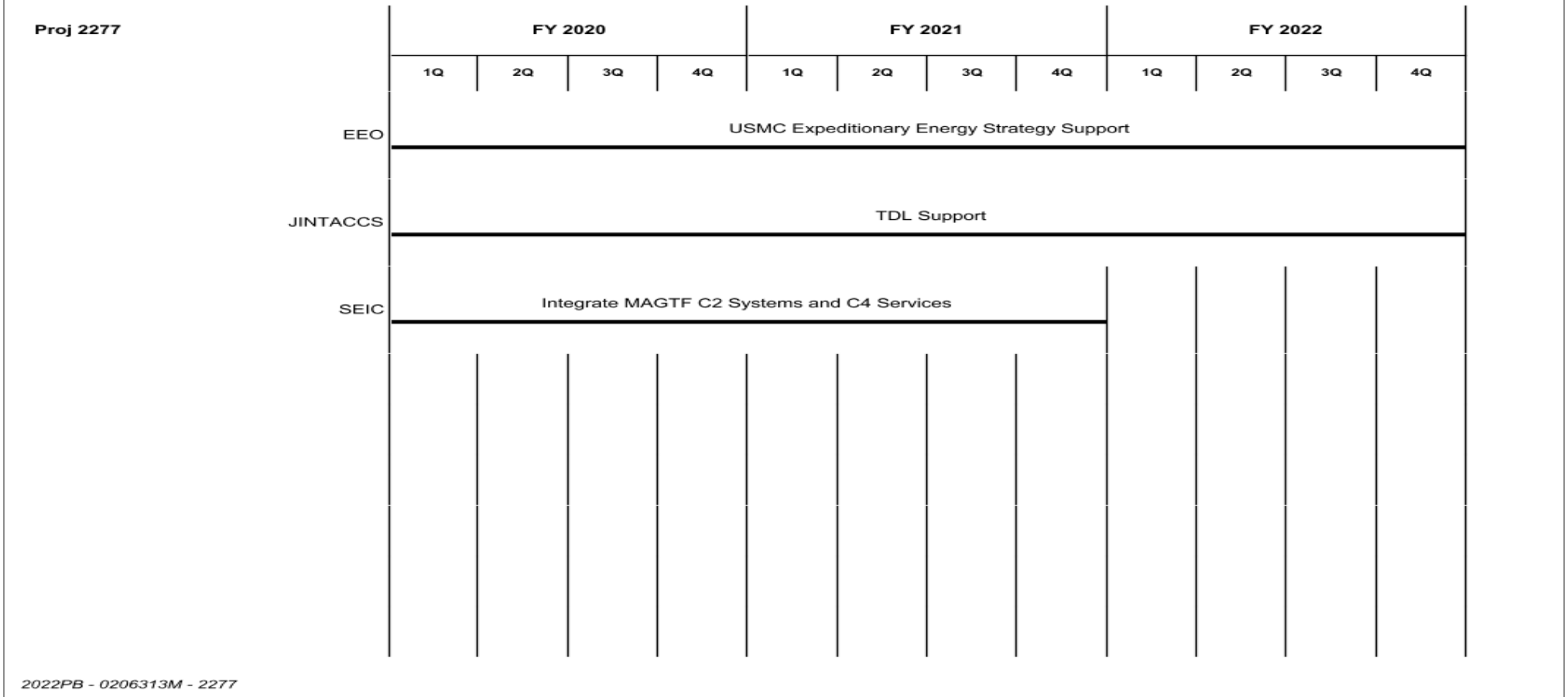
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JINTACCS-Travel	Various	PROGRAM : TRAVEL	0.380	0.032	Feb 2020	0.059	Feb 2021	0.061	Feb 2022	-		0.061	-	-	-
		Subtotal	0.380	0.032		0.059		0.061		-		0.061	-	-	N/A

	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	39.955	4.876		2.627		1.909		-		1.909	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2277 / *System Engineering and Integration*



2022PB - 0206313M - 2277

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2277 / *System Engineering and Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2277				
EEO: USMC Expeditionary Energy Strategy Support	1	2020	4	2022
JINTACCS: TDL Support	1	2020	4	2022
SEIC: Integrate MAGTF C2 Systems and C4 Services	1	2020	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy											Date: May 2021	
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*				Project (Number/Name) 2278 / *Air Defense Weapons System*			
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
2278: *Air Defense Weapons System*	189.634	66.766	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

To provide greater transparency of efforts associated with Marine Corps Air Defense Weapon Systems, a new program element was created. All accomplishments in FY 2021 and FY 2022 are under PU 2278 Marine Air Defense Integrated Systems Family of Systems (MADIS FoS), 2578 Medium Range Intercept Capability (MRIC), and 9999 (L-MADIS Congressional Add) under PE 0605520M.

A. Mission Description and Budget Item Justification

Ground Based Air Defense (GBAD) includes multiple Commandant of the Marine Corps (CMC) Force Design priority programs. It supports the Low Altitude Air Defense (LAAD) Battalion's missions of Short Range Air Defense (SHORAD) and provides the Marine Air Ground Task Force (MAGTF) to include; maneuver forces, bases, posts and stations, the necessary force protection to defeat the full spectrum of threats associated with the Marine Corps Low-Altitude Air Defense mission, to include hostile aerial threats from Unmanned Aircraft Systems (UAS). With the proliferation of both military and commercial UAS platforms, the program is pursuing and acquiring more lethal and survivable GBAD Future Weapons System platforms; such as JLTV's with armored protection and better maneuverability than a HMMWV, providing increased Counter-UAS (C-UAS) capabilities now and continually spiraling out increasing capability for the foreseeable future.

Based on an Urgent Universal Need Statement (UUNS), a Joint Urgent Operational Need (JUON), and a Joint Emergent Operational Need (JEON) the Marine Corps has aggressively pursued Counter Unmanned Aircraft Systems (CUAS) solutions in support of deployed Marines and critical facilities. The development of these solutions has been leveraged heavily by the Marine Air Defense Integrated System (MADIS) Increment 1 (Inc 1) on a Joint Light Tactical Vehicle (JLTV), the ACAT II Program of Record that will initiate at MS B in 3Q FY 2021.

Marine Air Defense Integrated System Family of Systems (MADIS FoS): The MADIS FoS provides the Marine Corps with an organic, upgradable, and state of the art capability to protect MAGTF maneuver forces, installations and other designated defended assets from Fixed/Rotary Wing (FW/RW) aircraft and Unmanned Aircraft Systems. The MAGTF is at increased risk of lethal air attack and fires coordination from next generation aircraft as well as significant advances from small UAS (sUAS) threats due to their rapid development and proliferation by the commercial sector, which has increased their nefarious use by both state and non-state actors. To address these threats, the MADIS FoS consists of mission tailored variants designed for sustained operations ashore, afloat, and aboard installations.

The MADIS FoS includes the fielded Advanced Man Portable Air Defense System (A-MANPADS) which provides close-in, low altitude, surface-to-air fires and command and control in defense of the MAGTF. It also includes the MADIS Inc 1 which is accomplished with the development, test, and installation of Government Furnished C-UAS equipment on a Joint Light Tactical Vehicle (JLTV). The MADIS Inc 1 system is comprised of two vehicles; a MK 1 (stinger variant), and a MK 2 (CUAS variant). MADIS Increment 2 (Inc 2) will focus on the development of an extended range for the Inc 1 system as well as the development of kinetic and non-kinetic capability supporting increased lethality. This includes the development of a drone on drone system, a high powered microwave capability to counter swarms and enhancements

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

for a direct fire CUAS capability, and other yet to be identified technologies that can be integrated with the MADIS FoS. The MADIS Inc 1 will replace the AMANPADs fielded systems. The MADIS FoS also includes the Lightweight Marine Air Defense Integrated System (L-MADIS), which will be accomplished with the development, test, and installation of Government Furnished C-UAS equipment on a Ultra-Light Tactical Vehicle (ULTV). The L-MADIS Program of Record (PoR) system is comprised of two vehicles; a MK 1 (Command and Control vehicle), and a MK 2 (Early Warning / Electronic Warfare vehicle). The L-MADIS PoR will replace the systems fielded under a Joint Urgent and Emergent Operational Need Statement. The L-MADIS will provide the Marine Corps a capability different than that of the MADIS Increment 1. The L-MADIS is transportable with organic Marine Corps assets, allowing Marines to face challenging operational scenarios during Marine Expeditionary Unit (MEU) operations. The L-MADIS will protect the maneuver force from threat of Unmanned Aircraft Systems (UAS), Fixed Wing and Rotor Wing (FW/RW), and other airborne threats throughout the operating environment while maintaining Marine Corps expeditionary requirements.

Medium Range Intercept Capability (MRIC): The MRIC will provide the Marine Corps Expeditionary Force Commander a capability to defend forward deployed forces primarily against threat subsonic/supersonic cruise missiles; secondarily against UAS and other aerial threats that enter into the MRIC's Weapons Engagement Zone (WEZ). MRIC is designed as a system-of-systems and will be integrated with Marine Corps organic Command and Control (C2) and Joint Integrated Air and Missile Defense (IAMD) architecture. The program will enhance the expeditionary force ground based air defense (GBAD) capability to rapidly prosecute aerial threats and expand layered defense of the Expeditionary and Naval Forces. The MRIC Prototype Development will be completed 4QFY22 and comprised of missile launchers, intercept missiles, and a C2 system that are able to utilize available AN/TPS-80 G/ATOR radar for surveillance and fire control. This effort informs the investment to meet the Force Design requirements to field an MRIC Battery to each of the three LAAD Battalions in FY26, FY27 and FY28 to support operations including Expeditionary Advanced Based Operations (EABO).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: GBAD STINGER SUSTAINMENT: Product Development	0.026	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Title: CUAS/MADIS INC 1 Product Development	19.676	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: Accomplishments are under PE 0605520M Air Defense Weapon Systems					
FY 2022 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Accomplishments are under PE 0605520M Air Defense Weapon Systems ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** In order to provide greater transparency of Marine Corps efforts associated to Air Defense Weapon Systems, a new program element has been created under 0605520M. All accomplishments are provided within the PE 0605520M exhibit.					
Title: CUAS/MADIS INC 1: Support Costs	3.877	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The Government Technical Support Team provides functions such as technical planning, execution and analysis across multi-disciplinary competencies to include; Systems Architecture, Radar/Jamming Software Engineering, Radar/Jamming Systems Engineering, Cyber Security/Information Assurance, Human Systems Integration, Safety, Configuration Management and the coordination necessary to enable a System of Systems interface with other programs in the "Cue to Slew" kill chain to ensure platform/software compatibility. ***FY 2021 Plans:*** Accomplishments are provided under PE 0605520M Air Defense Weapon Systems ***FY 2022 Base Plans:*** Accomplishments are provided under PE 0605520M Air Defense Weapon Systems ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** In order to provide greater transparency of Marine Corps efforts associated to Air Defense Weapon Systems, a new program element has been created under 0605520M. All accomplishments are provided within the PE 0605520M exhibit.					
Title: CUAS/MADIS INC 1: Test and Evaluation	12.010	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Accomplishments are under PE 0605520M Air Defense Weapon Systems ***FY 2022 Base Plans:*** Accomplishments are under PE 0605520M Air Defense Weapon Systems ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** In order to provide greater transparency of Marine Corps efforts associated to Air Defense Weapon Systems, a new program element has been created under 0605520M. All accomplishments are provided within the PE 0605520M exhibit.					
Title: CUAS/MADIS INC 1: Management Services	0.877	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: Accomplishments are under PE 0605520M Air Defense Weapon Systems ***FY 2022 Base Plans:*** Accomplishments are under PE 0605520M Air Defense Weapon Systems ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** In order to provide greater transparency of Marine Corps efforts associated to Air Defense Weapon Systems, a new program element has been created under 0605520M. All accomplishments are provided within the PE 0605520M exhibit.					
Title: INCREMENT 2 INCREASED LETHALITY: Product Development	11.782	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: Accomplishments are under PE 0605520M Air Defense Weapon Systems ***FY 2022 Base Plans:*** Accomplishments are under PE 0605520M Air Defense Weapon Systems ***FY 2022 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** In order to provide greater transparency of Marine Corps efforts associated to Air Defense Weapon Systems, a new program element has been created under 0605520M. All accomplishments are provided within the PE 0605520M exhibit.					
Title: INCREMENT 2 INCREASED LETHALITY: Test and Evaluation	3.218	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: Accomplishments are under PE 0605520M Air Defense Weapon Systems ***FY 2022 Base Plans:*** Accomplishments are under PE 0605520M Air Defense Weapon Systems ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** In order to provide greater transparency of Marine Corps efforts associated to Air Defense Weapon Systems, a new program element has been created under 0605520M. All accomplishments are provided within the PE 0605520M exhibit.					
Title: MED RANGE INTERCEPT CAP (MRIC): Product Development	13.860	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: FY 2021 Product Development Accomplishments are included in RDTE,N Project 2278 PE 0605520M ***FY 2022 Base Plans:*** FY 2022 Product Development Plans are included in RDTE,N Project 2578 PE 0605520M. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
In order to provide greater transparency of Marine Corps efforts associated to Air Defense Weapon Systems, a new program element has been created under 0605520M. All accomplishments are provided within the PE 0605520M exhibit.					
Title: MED RANGE INTERCEPT CAP (MRIC): Support ***Articles:*** ***FY 2021 Plans:*** FY 2021 Support Accomplishments are provided under RDTE,N Project 2278, PE 0605520M ***FY 2022 Base Plans:*** FY 2022 Support Accomplishments are provided under RDTE,N Project 2578, PE 0605520M ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** In order to provide greater transparency of Marine Corps efforts associated to Air Defense Weapon Systems, a new program element has been created under 0605520M. All accomplishments are provided within the PE 0605520M exhibit.	1.240 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: MED RANGE INTERCEPT CAP (MRIC): Test and Evaluation ***Articles:*** ***FY 2021 Plans:*** FY 2021 Test and Evaluation Accomplishments are provided within RDTE,N Project 2278 PE 0605520M. ***FY 2022 Base Plans:*** FY 2022 Test and Evaluation Accomplishments are included within RDTE,N Project 2578. PE 0605520M ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** In order to provide greater transparency of Marine Corps efforts associated to Air Defense Weapon Systems, a new program element has been created under 0605520M. All accomplishments are provided within the PE 0605520M exhibit.	0.200 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	66.766	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/3006: *GBAD*	147.606	17.686	9.349	-	9.349	-	-	-	-	-	-
• RDTEN/0605520M/2578: *GBAD: MRIC*	0.000	0.000	7.846	-	7.846	-	-	-	-	-	-
• RDTEN/0605520M/2278: *Air Defense Weapons System*	0.000	118.381	57.535	-	57.535	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

GBAD Ground Based Air Defense (GBAD): The GBAD capability will be developed in increments per the Capabilities Development Document (CDD). Increment 1 modernizes the existing GBAD legacy systems (A-MANPADS) by mounting a mix of legacy and technologically mature capabilities (leveraging UUNS related efforts) onto the Joint Light Tactical Vehicle (JLTV), mitigating the risk of attacks from UAS and FW/RW aircraft, while maintaining pace with maneuver forces. The MADIS full Increment 1 capability will be achieved via a 2 block approach. The first block will include a turret with a direct fire 30MM gun, non-kinetic (via electronic attack) UAS defeat capability, and a dual launch stinger. The second block introduces additional kinetic and non-kinetic C-UAS capability. The subsequent Increment 2 included in the CDD is not yet planned but is intended to further increase the lethality of the MADIS system. Each MADIS Inc 1 system built to the block 1 configuration, to include Low Rate Initial Production (LRIP), will be retrofitted to include block 2 capabilities. The Marine Air Defense Integrated System (MADIS Inc 1) has been designated an ACAT II program. The MADIS Inc 1 development leverages JUON and JEON development efforts and will initiate at Milestone B 3Q FY 2021.

The GBAD CDD defines Increment 3 as a Medium Range Intercept Capability (MRIC) which is an additional component of the defense in depth approach to aerial threats. (MRIC) is designed to defend fixed/operationally fixed assets against Cruise Missiles (CM), group 3+ UAS, Rockets, Artillery, and Mortars (RAM), and Fixed Wing / Rotary Wing threats that enter the MRIC's Weapons Engagement Zone (WEZ). To support an MRIC Material Support Decision, a concept demonstration of a proposed counter cruise missile (CM) defense system occurred in 4Q FY 2019. The MRIC received an approved Middle Tier Acquisition decision in 3Q FY 2020 placing the system into Rapid Prototyping. Design and integration efforts for a single prototype cruise missile defense capability are underway. Once the capability is successfully demonstrated during live fire testing events, a Deployment Decision will occur in 4Q FY 2022.

The full funding requirement for the MRIC MTA prototype effort as outlined in the Report to Congress is below:
FY19: $9.9M (this exhibit)
FY20: $15.3M (this exhibit)
FY21: $52.4M
FY22: $7.8M

The total cost of the MRIC MTA prototyping effort is $85.4M, and is fully funded in RDT&E.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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L-MADIS is fully leveraging JUON efforts and will have an approved CDD annex in FY22. The L-MADIS will develop a C-UAS capability on the new Ultra-Light Tactical Vehicle (ULTV) and produce Low Rate Initial Production (LRIP) vehicles for testing in FY 2023. It is anticipated that the L-MADIS will be designated as an ACAT IVT program with MS C scheduled for 4QFY22

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AMANPADs Night Sight Design	WR	NSWC : Crane.IN	5.473	0.026	Dec 2019	0.000		0.000		-		0.000	-	-	-
MADIS Inc 1 SW Development	Various	NSWC : Dahlgren, VA	1.493	1.636	Nov 2019	0.000		0.000		-		0.000	-	-	-
MADIS Inc 1 Design Development	Various	NSWC : Crane.IN	6.115	0.889	Dec 2019	0.000		0.000		-		0.000	-	-	-
MADIS Inc 1 Design Development	C/CPFF	DMEA : McClellan, CA	0.000	9.524	Aug 2020	0.000		0.000		-		0.000	-	-	-
MADIS Inc 1 EDM HW	MIPR	DLA : Philadelphia, PA	0.000	2.637	May 2020	0.000		0.000		-		0.000	-	-	-
MADIS Inc 1 Weapons Station Integration	MIPR	MCSC : Quantico, VA	0.000	4.990	Aug 2020	0.000		0.000		-		0.000	-	-	-
Inc 2 OCO Kinetic Kill Develop/HW SDD	Various	Various : Various	0.000	11.782	Nov 2020	0.000		0.000		-		0.000	-	-	-
MRIC Design Development	C/FFP	DMEA : McClellan, CA	0.000	2.700	Aug 2020	0.000		0.000		-		0.000	-	-	-
MRIC SW Architecture Development	C/FFP	Raytheon Solypsis : Fulton, MD	0.000	2.600	Apr 2020	0.000		0.000		-		0.000	-	-	-
MRIC SW Architecture Development	C/FFP	DMEA : McClellan, CA	0.000	0.651	Mar 2021	0.000		0.000		-		0.000	-	-	-
MRIC System Develop & Integ	C/IDIQ	DMEA : McClellan, CA	0.000	7.909	May 2021	0.000		0.000		-		0.000	-	-	-
Prior Years Cumulative Funding	Various	N/A : N/A	119.830	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	132.911	45.344		0.000		0.000		-		0.000	-	-	N/A

Remarks

All Product Development accomplishments in FY 2021 and FY 2022 are under PE 0605520M.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 2278 / *Air Defense Weapons System*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CUAS/MADIS Inc 1 HSI	Various	NSWC : Dahlgren	10.621	0.745	Apr 2020	0.000		0.000		-		0.000	-	-	-
MADIS Inc 1 Tech Spt	C/FFP	MCSC : Quantico, VA	0.307	0.516	Jan 2020	0.000		0.000		-		0.000	-	-	-
MADIS Inc 1 Integrated Logistics/Eng	Various	VARIOUS : VARIOUS	1.066	1.638	Dec 2019	0.000		0.000		-		0.000	-	-	-
MADIS Inc 1 Curriculum Development, Eng, FSR	Various	NSWC : Crane, IN	3.816	0.978	Apr 2020	0.000		0.000		-		0.000	-	-	-
MRIC Threat Analysis Spt, M&S	Various	VAR : VAR	0.000	0.500	Apr 2020	0.000		0.000		-		0.000	-	-	-
MRIC IA/Safety/Eng Spt	Various	NSWC : Dahlgren	0.000	0.740	Mar 2021	0.000		0.000		-		0.000	-	-	-
Prior Years Cumulative Funding	Various	N/A : N/A	13.304	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	29.114	5.117		0.000		0.000		-		0.000	-	-	N/A

Remarks

All Support accomplishments in FY 2021 and FY 2022 are under PE 0605520M.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CUAS/MADIS Inc 1 Test Support	C/FFP	Lumbee Tribe : Pembroke, NC	4.149	5.344	Dec 2019	0.000		0.000		-		0.000	-	-	-
CUAS/MADIS Inc 1 Test Support	WR	NSWC Corona : Corona, CA	1.125	0.350	Nov 2019	0.000		0.000		-		0.000	-	-	-
MADIS Inc 1 Component/ Lab Testing	Various	NSWC : Dahlgren, VA	0.000	4.360	Apr 2020	0.000		0.000		-		0.000	-	-	-
MADIS Inc 1 Systems Integration Lab	Various	NSWC : Dahlgren, VA	0.000	1.956	Sep 2020	0.000		0.000		-		0.000	-	-	-
Inc 2 OCO Live Fire Test	MIPR	PD CRAM : Redstone Arsenal, AL	0.000	3.218	May 2020	0.000		0.000		-		0.000	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 2278 / *Air Defense Weapons System*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MRIC Test Range	MIPR	White Sands Missile Range : White Sands, NM	1.005	0.200	Sep 2020	0.000		0.000		-		0.000	-	-	-
Prior Years Cumulative Funding	Various	N/A : N/A	10.749	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	17.028	15.428		0.000		0.000		-		0.000	-	-	N/A

Remarks

All Test and Evaluation accomplishments in FY 2021 and FY 2022 are under PE 0605520M.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MADIS FoS Travel	Various	PMO Travel : Quantico, VA	0.635	0.290	Sep 2020	0.000		0.000		-		0.000	-	-	-
MADIS FoS PMO Spt	WR	NSWC : Dahlgren, VA	0.264	0.587	Nov 2019	0.000		0.000		-		0.000	-	-	-
Prior Years Cumulative Funding	Various	N/A : N/A	9.682	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	10.581	0.877		0.000		0.000		-		0.000	-	-	N/A

Remarks

All Management Services accomplishments for FY 2021 and FY 2022 are under PE 0605520M.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	189.634	66.766		0.000		0.000		-		0.000	-	-	N/A

Remarks

To provide greater transparency of Marine Corps Air Defense Weapon Systems, a new program element was established. All accomplishments in FY 2021 and FY 2022 are under PE 0605520M.

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

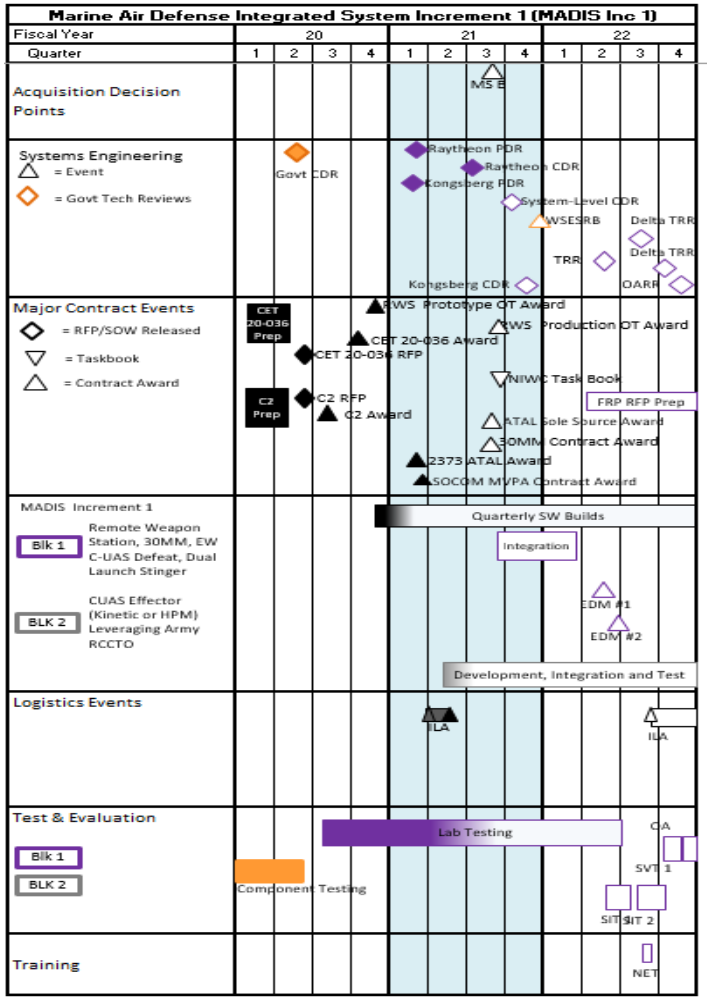


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

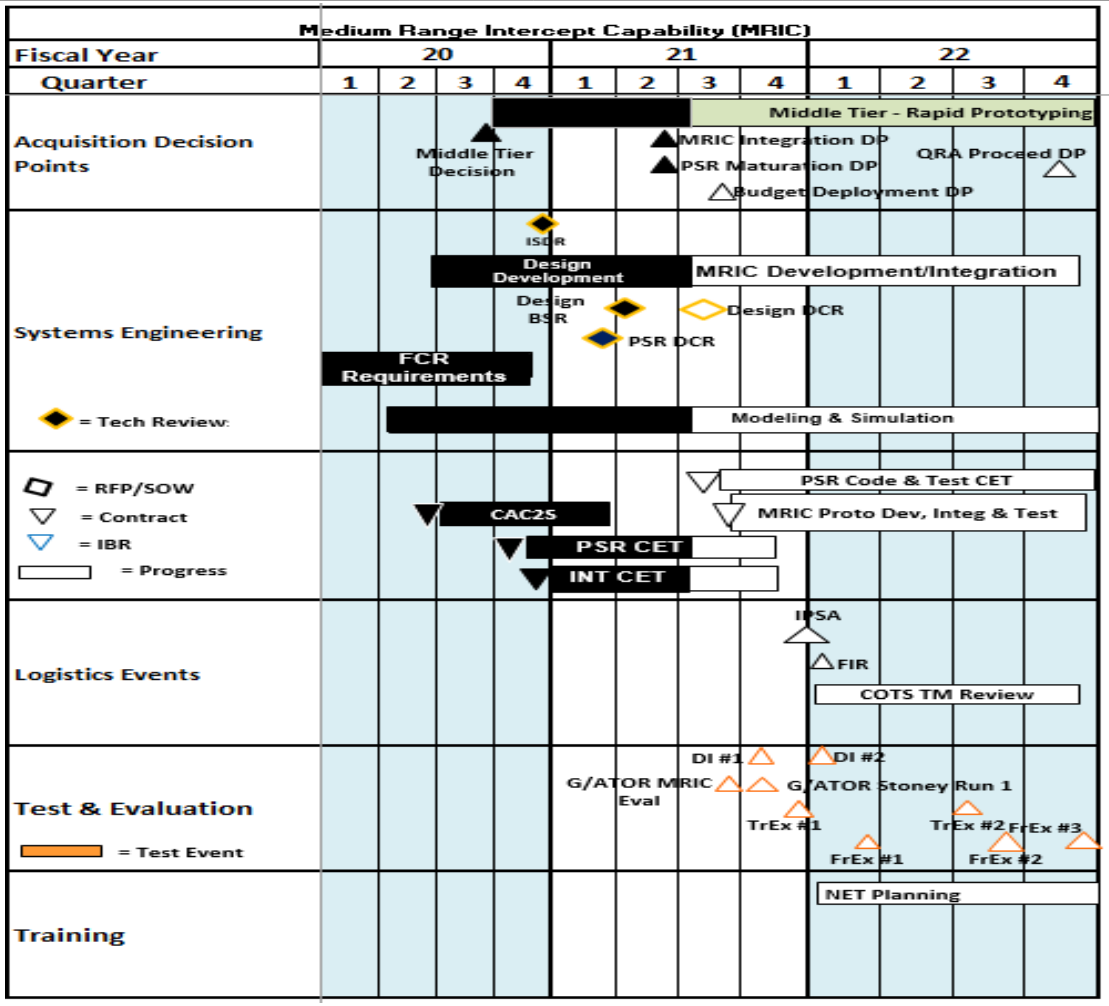


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MADIS INCREMENT-1				
MS "B"	3	2021	3	2021
OPERATIONAL ASSESSMENT	4	2022	4	2022
MEDIUM RANGE INTERCEPT CAPABILITY (MRIC)				
MIDDLE TIER PROTOTYPE DECISION	3	2020	3	2020
MRIC DEVELOPMENT/INTEGRATION	3	2021	4	2022
TRACKING EXERCISE (TR EX #1)	4	2021	4	2021
LIVE FIRE TEST (FREX #1)	1	2022	1	2022
TRACKING EXERCISE (TR EX #2)	3	2022	3	2022
LIVE FIRE TEST (FREX #2)	3	2022	3	2022
LIVE FIRE TEST (FREX #3)	4	2022	4	2022
MRIC UPDATE LIMITED DEPLOYMENT DECISION	4	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy											Date: May 2021	
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*				Project (Number/Name) 2510 / *MAGTF CSSE & SE*			
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
2510: *MAGTF CSSE & SE*	288.050	1.732	0.962	0.943	-	0.943	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

(U) The Marine Air Ground Task Force (MAGTF) Combat Service Support Element & Supporting Establishment (CSSE & SE) consists of mutually supporting Logistics Information Technology (IT) programs that support force deployment, planning, and execution; sustainment and distribution; and contributes to the Combatant Commander's Common Operating Picture to support rapid accurate decision making.

JOINT FORCE REQUIREMENTS GENERATOR II (JFRG II) is an Automated Information System (AIS) that provides the Marine Corps the capability to plan and execute strategic force deployments in support of Joint contingency and crisis action operations and plans. It serves as the single link between Service operational force requirements and validated/sourced unit personnel and cargo data. JFRG II permits multi-level planning with entry of equipment and personnel data, transportation/ movement data, and the phasing of the total force throughout the entire movement timeline. JFRG II interfaces with the Joint Planning and Execution Service (JPES) Program Management office (PMO) Joint Operation Planning and Execution System (JOPES) system that registers, updates and validates Time Phased Force and Deployment Data (TPFDD) within the Department of Defense chain of
command. Validated deployment information is then used by U.S. Transportation Command for the scheduling of strategic transportation assets. JFRG II interfaces with the Sea Service Deployment Module (SSDM) for unit cargo information, and the War Reserve System (WRS), to be replaced by the Integrated Material Analysis Tool (IMAT) sometime in fiscal year 2021,in order to register sustainment requirements. JFRG II can generate standard, executive, and ad hoc reports and perform database queries to support information requirements. JFRG II operates and functions in a classified environment.

MAGTF LOGISTICS SUPPORT SYSTEMS (MLS2): This is a Marine Corps Force Design Program. Composed of several main components including the Electronic Maintenance Support System (EMSS). EMSS is a rugged organizational-level (O-level), light-weight, one-man portable maintenance device capable of supporting multiple platforms and systems across maintenance communities. It provides a Commercial Off-The-Shelf (COTS) hardware device equipped with Built-In-Test/Built-In-Test Equipment (BIT/BITE) interfaces, and Software Defined Test Instrument (SDTI) General Purpose Electronic Test Equipment (GPETE) capabilities. These hardware capabilities will enable commercial or custom DoD and USMC software capabilities including Interactive Electronic Technical Manuals (IETMs), Computer Based Training (CBT), and other maintenance applications to be hosted on EMSS. EMSS also has the capability to connect to the Marine Corps Enterprise Network (MCEN) and access sites like Global Combat Support System - Marine Corps (GCSS-MC) in order to facilitate maintenance and supply transactions, thereby improving readiness. With these capabilities, maintainers will make more informed decisions and sustain force readiness over time.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: JOINT FORCE REQUIREMENTS GENERATION II (JFRG II)	1.104	0.206	0.207	0.000	0.207
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2510 / *MAGTF CSSE & SE*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
FY 2021 Plans: - Initiate Engineering Change Proposals (ECPs) to increase user functionality for legacy system, initiate platform update from Ozone Widget Framework (OWF) version 7 to OWF v8 and initiate Cross Domain Solution Development (CDS). ***FY 2022 Base Plans:*** - Initiate Engineering Change Proposals (ECPs) to increase user functionality for legacy system and continue Cross Domain Solution (CDS) development. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.001M from FY 2021 to FY 2022 reflects inflation for technical expertise required to provide Engineering Change Proposal (ECP) efforts and the continued development of a Cross Domain Solution.					
Title: MAGTF LOGISTICS SUPPORT SYSTEMS (MLS2)	0.628	0.756	0.736	0.000	0.736
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue to develop additional GOTS diagnostic software capability for additional Heavy Equipment, Motor Transport, Ordnance and Engineer weapon systems in order to enhance maintenance capabilities, migrate away from more expensive commercial off the shelf (COTS) solutions, and decrease total ownership cost (TOC) for supported platforms. ***FY 2022 Base Plans:*** - Continue to develop additional GOTS diagnostic software capability for additional Heavy Equipment, Motor Transport, Ordnance and Engineer weapon systems in order to enhance maintenance capabilities, migrate away from more expensive commercial off the shelf (COTS) solutions, and decrease total ownership cost (TOC) for supported platforms. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2510 / *MAGTF CSSE & SE*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Decrease of $0.020M from FY 2021 to FY 2022 reflects completion of diagnostic software capability for the Engineer weapon system.					
Accomplishments/Planned Programs Subtotals	1.732	0.962	0.943	0.000	0.943

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/BLI 418100: *MAGTF Logistics Support Systems*	10.540	12.333	12.377	-	12.377	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

JOINT FORCE REQUIREMENTS GENERATOR II (JFRG II) is required to modernize in order to implement Joint Requirements Oversight Counsel (JROC) mandates in support of Adaptive Planning and Execution (APEX) including the inclusion of Global Force Management - Data Initiative (GFM-DI) data elements and Joint Command and Control (JC2) Capabilities Development Document (CDD) requirements. The JFRG II legacy software application will remain supported until end of life (EOL) or replaced by a modernized application. Future capability improvements as identified in the JC2 CDD will be implemented through the configuration management process.

MAGTF LOGISTICS SUPPORT SYSTEMS (MLS2) is pursuing an evolutionary acquisition strategy in order to sustain operationally suitable and supportable capability across the Marine Corps as a maintenance aid. Electronic Maintenance Support Systems must evolve in concert with the supported platforms maintenance philosophy to provide extended functionality and access to network connectivity.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2510 / *MAGTF CSSE & SE*

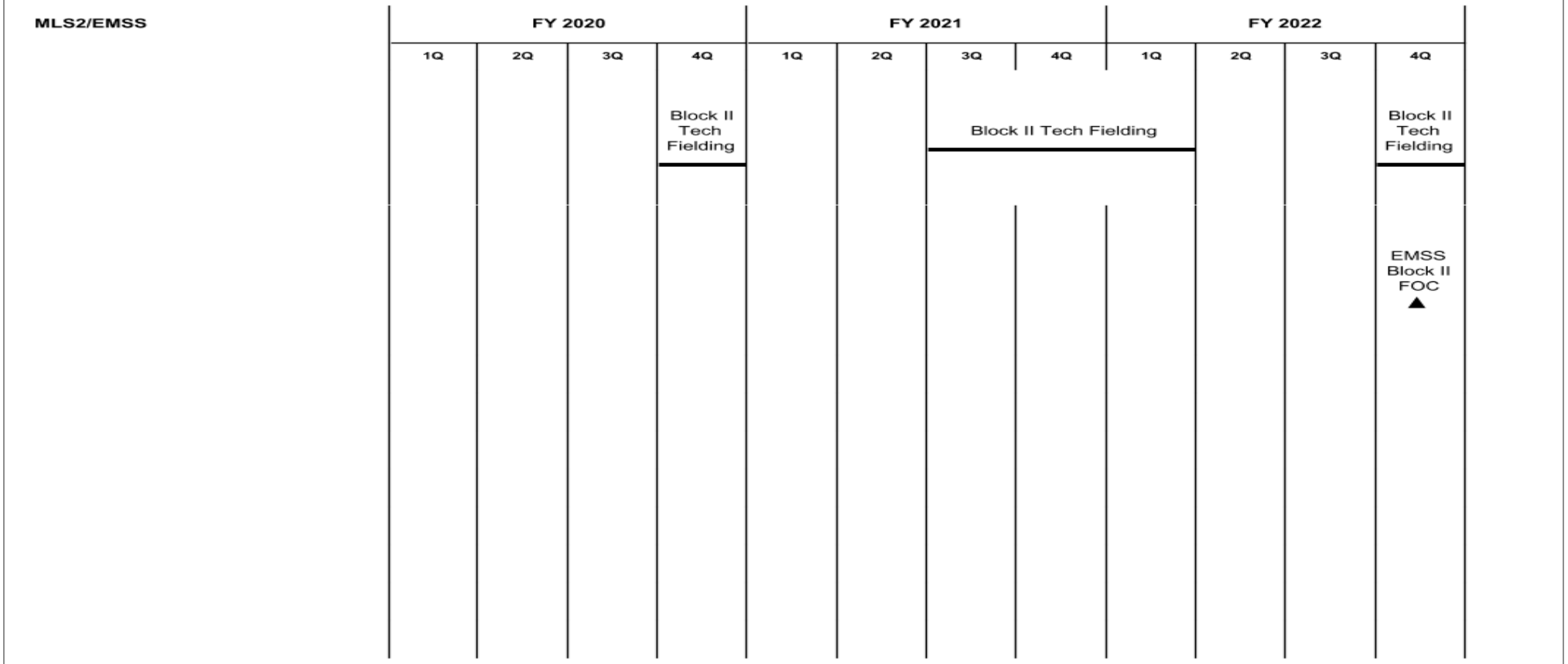
Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JFRG II	C/IDIQ	SAIC : Stafford, VA	2.706	0.000	Feb 2021	0.000		0.000		-		0.000	-	-	-
JFRG II	WR	NIWC LANT : Charleston, SC	0.000	0.804	Apr 2021	0.015	Nov 2021	0.207	Nov 2021	-		0.207	-	-	-
JFRG II	WR	DISA : Ft Meade, MD	0.000	0.300	Jul 2021	0.191	Oct 2021	0.000		-		0.000	-	-	-
EMSS/MAGTF Logistics Support Systems	WR	NSWC, Crane : Crane, IN	2.091	0.321	Feb 2020	0.398	Feb 2021	0.352	Feb 2022	-		0.352	-	-	-
EMSS/MAGTF Logistics Support Systems	WR	MCLC, Albany : Albany, GA	0.000	0.307	Feb 2020	0.358	Feb 2021	0.384	Feb 2022	-		0.384	-	-	-
Prior Years Cumulative Funding	Various	Various : Various	283.253	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	288.050	1.732		0.962		0.943		-		0.943	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	288.050	1.732		0.962		0.943		-		0.943	-	-	N/A

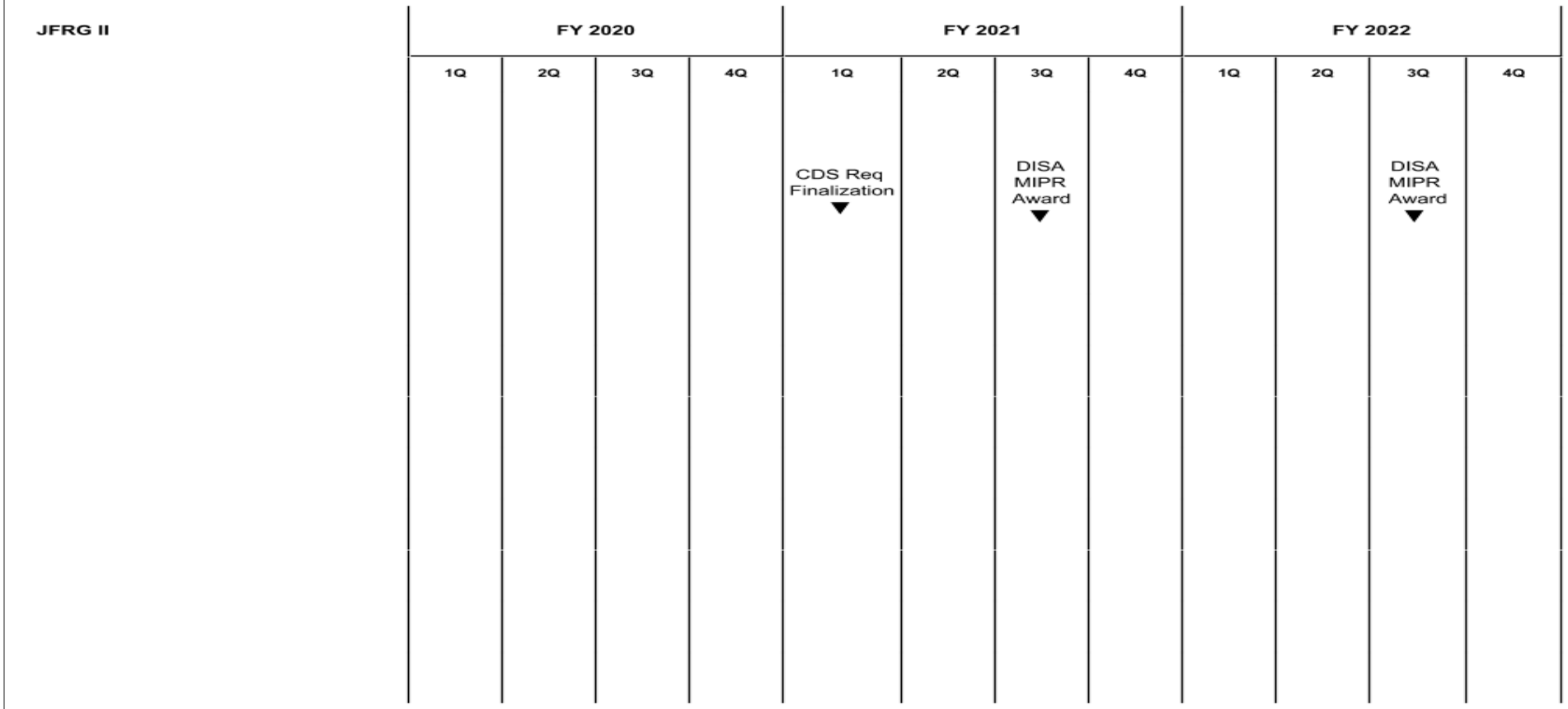
Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2510 / *MAGTF CSSE & SE*



2022PB - 0206313M - 2510

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2510 / *MAGTF CSSE & SE*



2022PB - 0206313M - 2510

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2510 / *MAGTF CSSE & SE*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MLS2/EMSS				
FY20 EMSS Block II Fielding	4	2020	4	2020
FY21 EMSS Block II Fielding	3	2021	1	2022
FY22 EMSS Block II Fielding	4	2022	4	2022
FY22 EMSS Block II FOC	4	2022	4	2022
JFRG II				
Legacy Enhancement and Cross Domain Solution (CDS) Requirements FInalization	1	2021	1	2021
Development of CDS Platform	3	2021	3	2021
Cont. Development of CDS Platform	3	2022	3	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 3099 / *Radar System*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3099: *Radar System*	214.477	13.180	1.431	1.134	-	1.134	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Long Range Radar (AN/TPS-59) - The AN/TPS-59A(V)3 is a transportable, three dimensional, tactical radar system that provides the Marine Air Ground Task Force (MAGTF) with long-range surveillance. It is the MAGTF's only ground based long range sensor that provides the capability to detect and report Air Breathing Targets (ABT) and track Theater Ballistic Missiles (TBM). The AN/TPS-59A(V)3 Radar System is connected to the Common Aviation Command and Control Systems (CAC2S). It provides the air defense controllers data and may be used autonomously to conduct Ground Control Intercept, tactical en-route Air Traffic Control (ATC), or TBM alert operations via the Joint Integrated Air Missile Defense (IAMD) encrypted Link-16. AN/TPS-59 funding zeroed beginning FY 2021 due to Marine Corps decision to modernize in accordance with the National Defense Strategy (NDS)/Defense Planning Guidance (DPG).

Virtual Warfare Center (VWC) Support - The project team conducts fully interactive simulated war games at the Virtual Warfare Center (VWC) in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the Integrated Air and Missile Defense (IAMD) mission area. The VWC provides a venue for the exploration of advanced engagement concepts focused on persistent forward naval engagements in support of the MAGTF and the development of associated Joint and Service specific tactics, techniques, and procedures (TTPs). VWC support encompasses a set of integrated fire control (IFC) activities that also includes concept/CONOPS development, family of systems architecture development, and systems engineering/integration efforts.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: AN/TPS-59: Product Development	5.000	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: - N/A					
FY 2022 Base Plans: - N/A					
FY 2022 OCO Plans: N/A					
Title: AN/TPS-59: Support	1.299	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3099 / *Radar System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- N/A ***FY 2022 Base Plans:*** - N/A ***FY 2022 OCO Plans:*** N/A					
Title: AN/TPS-59: Test and Evaluation ***Articles:*** ***FY 2021 Plans:*** - N/A ***FY 2022 Base Plans:*** - N/A ***FY 2022 OCO Plans:*** N/A	1.236 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: AN/TPS-59: Management Services ***Articles:*** ***FY 2021 Plans:*** - N/A ***FY 2022 Base Plans:*** - N/A ***FY 2022 OCO Plans:*** N/A	1.900 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: VWC: Test and Evaluation ***Articles:*** ***FY 2021 Plans:*** - Continue the simulation of war games at the VWC in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the Integrated Air and Missile Defense (IAMD) mission area. ***FY 2022 Base Plans:***	0.431 -	0.344 -	0.277 -	0.000 -	0.277 -

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3099 / *Radar System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue the simulation of war games at the VWC in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the Integrated Air and Missile Defense (IAMD) mission area. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.067M reflects reduction of simulation efforts required to determine system performance in the Integrated Air and Missile Defense (IAMD) mission area.					
Title: VWC: Support	3.314	1.087	0.857	0.000	0.857
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue to simulate war games at the VWC in St. Louis, MO, for the quantification of the family of systems performance and determine how it impacts effectiveness in the Integrated Air and Missile Defense (IAMD) mission area. ***FY 2022 Base Plans:*** - Continue to simulate war games at the VWC in St. Louis, MO, for the quantification of the family of systems performance and determine how it impacts effectiveness in the Integrated Air and Missile Defense (IAMD) mission area. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.230M from FY 2021 to FY 2022 reflects reduction of simulation efforts required to determine system performance in the Integrated Air and Missile Defense (IAMD) mission area.					
Accomplishments/Planned Programs Subtotals	13.180	1.431	1.134	0.000	1.134

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/4650-1: *AN/TPS-59*	0.329	0.000	0.000	-	0.000	-	-	-	-	-	-

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3099 / *Radar System*

D. Acquisition Strategy

Virtual Warfare Center (VWC) Support - The project team conducts fully interactive simulated war games at the Virtual Warfare Center (VWC) in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the Integrated Air and Missile Defense (IAMD) mission area. VWC support encompasses a set of integrated fire control (IFC) activities that also includes concept/CONOPS development, family of systems architecture development, and systems engineering/ integration efforts. The Office of Naval Research (ONR) is the lead for all VWC contracting actions.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 3099 / *Radar System*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 - DREX EDM Development	SS/CPFF	LMC : Syracuse, NY	8.491	3.045	Dec 2019	0.000		0.000		-		0.000	-	-	-
AN/TPS-59 - DREX EDM Development Program Management	SS/CPFF	LMC : Syracuse, NY	4.972	1.955	Nov 2019	0.000		0.000		-		0.000	-	-	-
Prior Year Cumulative Funding	Various	Various : Various	90.234	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	103.697	5.000		0.000		0.000		-		0.000	-	-	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 - Engineering Support	C/FFP	MCSC : Quantico, VA	2.890	1.299	Nov 2019	0.000		0.000		-		0.000	-	-	-
VWC	C/CPFF	ONR : St. Louis, MO	22.594	3.314	Feb 2020	1.087	Feb 2021	0.857	Feb 2022	-		0.857	-	-	-
Prior Year Cumulative Funding	Various	Various : Various	52.687	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	78.171	4.613		1.087		0.857		-		0.857	-	-	N/A

Remarks

Decrease of $0.223M from FY 2021 to FY 2022 reflects reduction of simulation efforts required to determine system performance in the Integrated Air and Missile Defense (IAMD) mission area.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 - Test & Evaluation	C/CPFF	NSWC, Corona : Corona, CA	0.273	0.419	Aug 2020	0.000		0.000		-		0.000	-	-	-
AN/TPS-59 - GFE for Test Asset	C/CPFF	LMC : Syracuse, NY	0.000	0.817	Jun 2020	0.000		0.000		-		0.000	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3099 / *Radar System*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 - Platform Cert	MIPR	AIMS Prog Office : Warner Robbins AFB, GA	0.029	0.000		0.000		0.000		-		0.000	-	-	-
VWC	C/CPFF	ONR : St. Louis, MO	1.643	0.431	May 2020	0.344	May 2021	0.277	May 2022	-		0.277	-	-	-
Prior Year Cumulative Funding	Various	Various : Various	4.683	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	6.628	1.667		0.344		0.277		-		0.277	-	-	N/A

Remarks

Decrease of $0.067M from FY 2021 to FY 2022 reflects reduction of simulation efforts required to determine system performance in the Integrated Air and Missile Defense (IAMD) mission area.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 Engineering Support	MIPR	MITRE : Bedford, MA	0.000	1.900	Oct 2019	0.000		0.000		-		0.000	-	-	-
Prior Year Cumulative Funding	Various	Various : Various	25.981	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	25.981	1.900		0.000		0.000		-		0.000	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	214.477	13.180		1.431		1.134		-		1.134	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3099 / *Radar System*

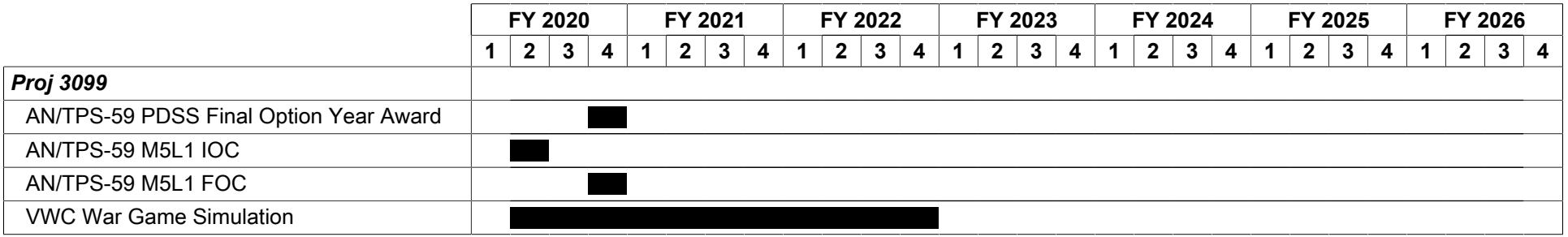


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3099 / *Radar System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3099				
AN/TPS-59 PDSS Final Option Year Award	4	2020	4	2020
AN/TPS-59 M5L1 IOC	2	2020	2	2020
AN/TPS-59 M5L1 FOC	4	2020	4	2020
VWC War Game Simulation	2	2020	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 3772 / *Information Related Capabilities (IRC)*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3772: *Information Related Capabilities (IRC)*	4.030	4.607	3.135	4.230	-	4.230	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Signature Management (SIGMAN): SIGMAN supports the goals of Force Design 2030 by providing tools that enable an expeditionary force to conduct distributed operations and produce mass effects while minimizing their own blue-force (friendly force) electromagnetic (EM) signature. This includes the capability to conduct blue-force signature assessment, blue-force signature planning, and advanced delivery of mass effects. SIGMAN is being developed in three increments. SIGMAN Increment I is the SIGMAN Visualization and Planning Tool (SVPT), which will provide commanders a display of their own force's EM signatures and the information needed to limit/mitigate their signatures. SIGMAN Increment II is the Multispectral Emitter-Light and SIGMAN III is the Multispectral Emitter-Heavy. Increments II and III will provide commanders the tools needed to mitigate blue-force signatures. Full development of SIGMAN capabilities is a key enabler to the Marine Littoral Regiment operating in contested signature environments where small maneuver elements must move, communicate, and survive while conducting Distributed Maritime Operations. SIGMAN provides the MLR the tools it needs to accurately assess and minimize its EM signature and greatly reduce the risk of detection and targeting.

Digital Media Systems (DMS) (formerly Public Affairs Systems (PAS)) provides the Marine Air-Ground Task Force (MAGTF) and the broader Marine Corps the capability to research, understand and affect the information environment. PA Marines and Systems enable commanders at all levels and across the range of military operations to engage domestic and foreign publics whose trust, confidence, and understanding are mission critical. The Public Affairs Systems (PAS) AAP identifies and fields materiel solutions required to research and plan communication initiatives, acquire still and video visual information, produce and disseminate communication products, and assess the effects of communication initiatives within the information environment. The program maintains an evolutionary approach to acquisitions, and leverages commercial industry-standard non-developmental items to provide the best value to the Marine Corps, while keeping PA Marines appropriately equipped to understand and affect the information environment. This effort supports research, testing, and evaluation of the Public Affairs Live Media Engagement System (PALMES) satellite transmission capability and testing of the Cloud environment. The Combat Camera and Public Affairs MOSs modernized into the Communication Strategy and Operations (COMMSTRAT) MOS. The Occupational Field modernization resulted in an increase to structure, personnel, and capability to support concepts of employment in the Information Environment. Due to the Occupational Field change, in FY 2023, the Combat Camera System (CCS) and Public Affairs Systems (PAS) Program of Record will modernize to Digital Media System (DMS). These increases and changes result in the demand for more equipment and capabilities to support both the legacy CCS and PAS programs as well as DMS. MCPC title for Public Affairs System changed to Digital Media Systems (DMS).

The Military Information Support Operations (MISO) Family of Systems (FoS), which consists of the Fly-Away Broadcast System (FABS), Next-Generation Loud Speaker (NGLS), Radio-In-A-Box (RIAB), and Marine Corps SOF Integration Node (MSIN), provides the Marine Air-Ground Task Force (MAGTF) Commander the ability to plan, develop, deliver and assess messages and actions to influence select foreign groups and promote themes to change those groups' attitudes and reduce civilian interference, minimize collateral damage, and increase the population's support for MAGTF operations. The MISO was established in response to multiple Marine Requirements Oversight Council Memorandums, and the approval of a MISO Organizational and Operational (O&O) Concept, 16 June 2015. MISO capabilities are

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

critical to the success of the MAGTF mission, enabling commanders to shape the information environment, counter enemy propaganda, misinformation, disinformation, and adversarial narratives.

Marine Civil Information Management System (MARCIMS) is a system of systems comprised of people, process and technology that operates in the full Joint, Interagency, Intergovernmental, and Multinational (JIIM) environment. It is a force multiplier for the commander that allows him to leverage the process of Planning, Collection, Consolidation, Analysis, Production, and sharing of civil information in order to support the visualization and understanding of the civil environment to the military commander's decision making process.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Signature Management (SIGMAN): Product Development	0.000	0.000	1.690	0.000	1.690
Articles:	-	-	-	-	-
FY 2021 Plans: N/A ***FY 2022 Base Plans:*** - Initiate the research and development of blue-force signature assessment, blue-force signature planning, and advanced delivery capability through Office of Naval Research (ONR) Cognitive Radio Frequency Inference Technology (CRIT) efforts. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $1.690M from FY 2021 to FY 2022 supports the initiation of research and development effort of key capabilities, to include blue-force (friendly force) electromagnetic signature assessment, blue-force signature planning, and advanced delivery capability through the Office of Naval Research. These are key enablers for Force Design 2030 that allow the Marine Littoral Regiment (MLR) to assess and mitigate risk.					
Title: Signature Management (SIGMAN): Test and Evaluation	0.000	1.979	2.355	0.000	2.355
Articles:	-	-	-	-	-
Description: The Signature Management (SIGMAN) will be utilized by the Marine Corps Information Operations Center (MCIOC) SIGMAN platoon to support MAGTF Operations with incremental capabilities to include blue-force electromagnetic signature monitoring, assessment and projection. SIGMAN Increment I is the SIGMAN Visualization and Planning Tool (SVPT). The SVPT will provide commanders a display of their own forces electrometric signatures and the ability to implementing measures to limit those signatures when possible. SIGMAN Increment II is the Multispectral Emitter-Light and SIGMAN Increment III is the Multispectral Emitter-					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Heavy. The SIGMAN Increment II and Increment III emitter systems will provide multiple signature emulation devices, to be used commanders, to project electromagnetic signature countermeasures to mask their own blue-force signature. Fluctuations within the funding profile is due to different components being procured each year. Prior to FY 2021, SIGMAN was funded within the Military Information Support Operations (MISO) Family of Systems (FoS) portfolio. ***FY 2021 Plans:*** - Continue research and development efforts for Signature Management (SIGMAN) capability for Increment I blue-force electromagnetic signature monitoring and capabilities. - Complete research and development efforts for Signature Management (SIGMAN) related to Increment II electromagnetic signature emitter devices. - Initiate research and development efforts for Signature Management (SIGMAN) related to Increment III electromagnetic signature emitter devices. ***FY 2022 Base Plans:*** - Complete research and development efforts for Signature Management (SIGMAN) capability for Increment I blue-force electromagnetic signature monitoring and capabilities. - Continue research and development efforts for Signature Management (SIGMAN) related to Increment III electromagnetic signature emitter devices. - Initiate and complete procurement of test articles for Increment III electromagnetic signature emitter devices. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.307M from FY 2021 to FY 2022 supports the procurement of test articles for Increment III electromagnetic signature devices. These test articles are key to developing expeditionary SIGMAN capabilities that will decrease the risk of detection and targeting of small units operating in a dispersed environment conducting Expeditionary Advanced Base Operation. This will also support the maneuverability of the MLR in order to meet the requirements of Force Design 2030.					
Title: Digital Media Systems (DMS) (Formerly Public Affairs System (PAS)): Product Development	0.319	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:*** N/A					
Title: Digital Media Systems (DMS) (Formerly Public Affairs System (PAS)): Test and Evaluation	0.056	0.225	0.058	0.000	0.058
Articles:	-	-	-	-	-
FY 2021 Plans: - Complete assessment to identify potential system upgrades for Communication Strategy and Operations (COMMSTRAT) and continue X-Band integration. - Purchase test articles in support of Marine Corps Tactical Systems Support Activity (MCTSSA) test events to focus on developmental testing on Hub environment upgrades, Windows 10 improvements, and Public Affairs Live Media Engagement System (PALMES) improvements. - Initiate and complete development efforts to identify potential system upgrades for COMMSTRAT in support of DMS. ***FY 2022 Base Plans:*** - Conduct test and evaluation activities related to the Next Generation (NEXGEN) Tactical Imagery Production System (TIPS) providing production verification and user evaluation in support of upgrades for the COMMSTRAT Occfield. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.167M from FY 2021 to FY 2022 due to reduced planned test and evaluation efforts/activites for Next Generation Tactical Imagery Production System (TIPS).					
Title: Military Information Support Operations (MISO): Product Development	2.062	0.931	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The MISO Family of Systems (FoS), which consists of the Fly-Away Broadcast System (FABS), Next-Generation Loud Speaker (NGLS), Radio-In-A-Box (RIAB), and Marine Corps SOF Integration Node (MISN), provides the Marine Air-Ground Task Force (MAGTF) Commander the ability to plan, develop, deliver					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
and assess messages and actions to influence select foreign groups and promote themes to change those groups' attitudes and reduce civilian interference, minimize collateral damage, and increase the population's support for MAGTF operations. Initiates product development of the Fly-Away Broadcast System (FABS) in preparation for a MS C decision. ***FY 2021 Plans:*** - Complete research and development efforts of the Fly-Away Broadcast System (FABS) for technical advising support and technology modernization. - Conduct the re-development of the FABS-Heavy. ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of $0.931M from FY 2021 to FY 2022 is due to the Heavy variant of the Fly-Away Broadcast System (FABS) transitioning to the Test and Evaluation phase.					
Title: Military Information Support Operations (MISO): Test and Evaluation	1.748	0.000	0.127	0.000	0.127
Articles:	-	-	-	-	-
Description: The MISO Family of Systems (FoS), which consists of the Fly-Away Broadcast System (FABS), Next-Generation Loud Speaker (NGLS), Radio-In-A-Box (RIAB), and Marine Corps SOF Integration Node (MISN), provides the Marine Air-Ground Task Force (MAGTF) Commander the capability to conduct planned operations to convey selected information and indicators to foreign adversary, neutral and friendly target audiences to influence their emotions, motives, objective reasoning, providing an operational advantage. Initiates product development of the Fly-Away Broadcast System (FABS) in preparation for a MS C decision. ***FY 2021 Plans:*** N/A ***FY 2022 Base Plans:*** - Conduct production verification and user evaluation testing of the Fly-Away Broadcast System (FABS) Heavy variant.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Provide Engineering Change Proposal (ECP) support for the development of software and cyber upgrades for ongoing technology modernizations. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase of $0.127M from FY 2021 to FY 2022 supports the test and evaluation of the Fly-Away Broadcast System (FABS) Heavy variant. Funding also provides ECP support for the development of required software and cyber upgrades to pursue technology modernizations.					
Title: MARCIMS: Product Development ***Articles:*** ***Description:*** Marine Civil Information Management System (MARCIMS) is a system of systems comprised of people, process and technology that operates in the full Joint, Interagency, Intergovernmental, and Multinational (JIIM) environment. It is a force multiplier for the commander that allows him to leverage the process of Planning, Collection, Consolidation, Analysis, Production, and sharing of civil information in order to support the visualization and understanding of the civil environment to the military commander's decision making process. ***FY 2021 Plans:*** N/A ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:*** N/A	0.422 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	4.607	3.135	4.230	0.000	4.230

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/4620AA: *MARCIMS*	0.000	0.302	0.000	-	0.000	-	-	-	-	-	-
• PMC/4620BB: *DMS (Formerly PAS)*	0.691	0.694	0.696	-	0.696	-	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/4620CC: *MISO*	6.289	4.987	4.038	-	4.038	-	-	-	-	-	-
• PMC/4620DD: *SIGMAN*	0.000	5.716	6.963	-	6.963	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

SIGMAN FoS is a new capability using existing hardware and software systems. SIGMAN FoS plans to expand upon capabilities and to introduce new signature assessment and management capabilities as technology updates mature with increased modularity, flexibility, and mobility.

Digital Media Systems will maximize the utilization of commercial-off-the-shelf devices and software to provide best overall performance solutions to the warfighter with minimal developmental cost and schedule investments.

MISO will complete environmental testing, refine system design, and validate production requirements in support of a MS C decision in Q4 FY 2021. MISO plans to laterally field all three FABS variants across multiple fiscal years, completing fielding no later than FY 2025. The program has sufficient Procurement funding budgeted across the Future Year Defense Plan (FYDP) to permit this fielding strategy.

MARCIMS continues to maintain an every-other-year procurement strategy to modernize and refresh hardware. MARCIMS retains configuration control of the system to ensure system best supports the Fleet.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SIGMAN	C/CPFF	ONR : Arlington, VA	0.000	0.000		0.000		1.690	Jan 2022	-		1.690	-	-	-
DMS/PAS	WR	TBD : TBD	0.092	0.375	Dec 2020	0.000		0.000		-		0.000	-	-	-
MISO	WR	JHU- PBL : Laurel, MD	1.080	2.062	Apr 2020	0.000		0.000		-		0.000	-	-	-
MISO	WR	NIWC LANT : Charleston, SC	0.000	0.000		0.931	Jan 2022	0.000		-		0.000	-	-	-
MARCIMS	WR	NIWC-IH : Indian Head, MD	0.000	0.422	Nov 2019	0.000		0.000		-		0.000	-	-	-
		Subtotal	1.172	2.859		0.931		1.690		-		1.690	-	-	N/A

Remarks

Increase of $0.783M from FY 2021 to FY 2022 is largely due to SIGMAN initiation of development efforts related to blue-force signature assessment, blue-force signature planning, and advanced delivery capability through ONR CRIT.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SIGMAN	WR	NIWC : Charleston, SC	0.000	0.000		1.979	Jan 2021	2.355	Jan 2022	-		2.355	-	-	-
DMS/PAS	WR	TBD : TBD	0.000	0.000		0.225	Apr 2021	0.058	Mar 2022	-		0.058	-	-	-
MISO	WR	NAVSEA : Laurel, MD	2.858	1.748	Feb 2020	0.000		0.000		-		0.000	-	-	-
MISO	WR	NIWC LANT : Charleston, SC	0.000	0.000		0.000		0.127	Nov 2021	-		0.127	-	-	-
		Subtotal	2.858	1.748		2.204		2.540		-		2.540	-	-	N/A

Remarks

Increase of $0.336M from FY 2021 to FY 2022 is largely due to the procurement of SIGMAN test articles for electromagnetic signature emitter devices.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 3772 / *Information Related Capabilities (IRC)*	

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	4.030	4.607		3.135		4.230		-		4.230	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

SIGMAN

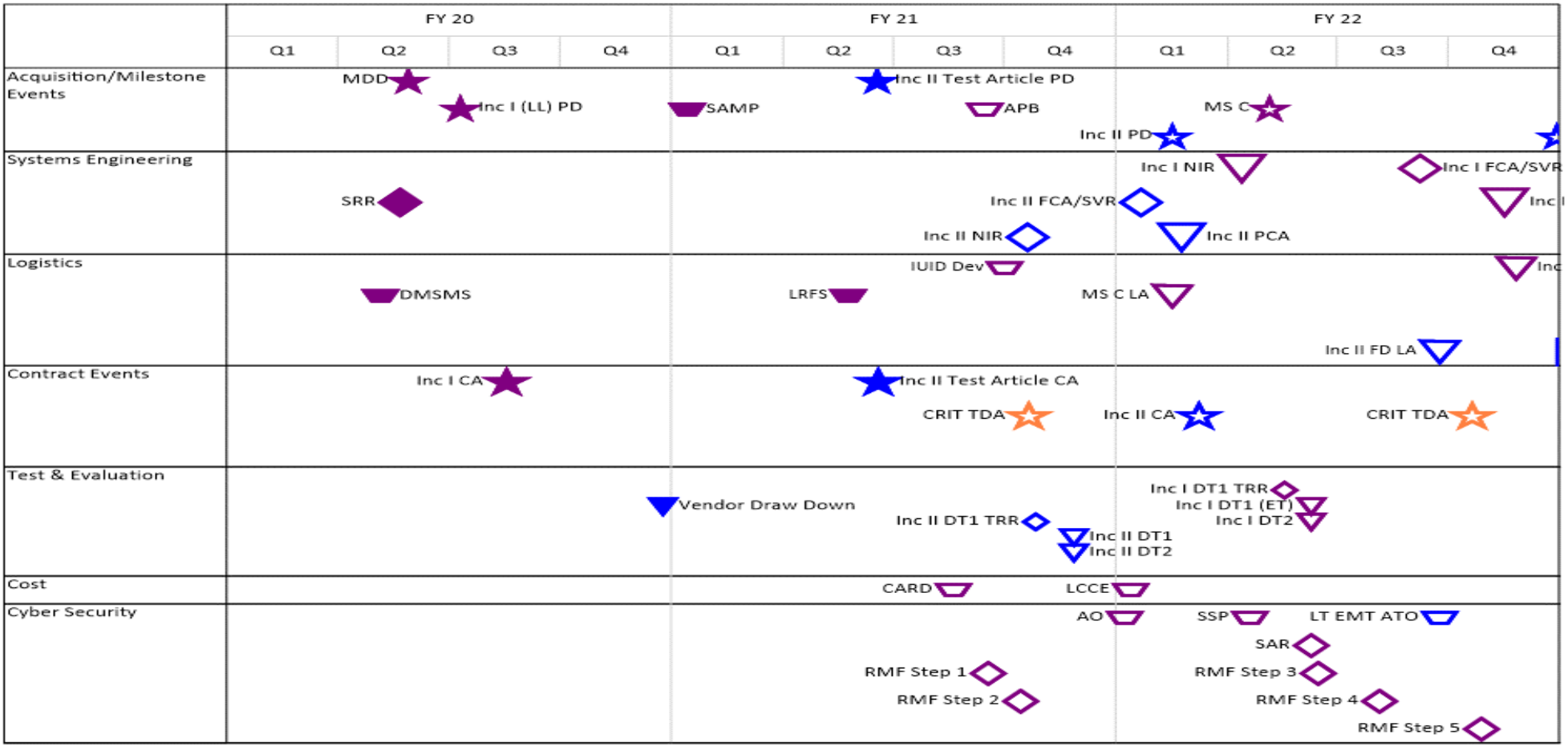


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

DMS R&D FY20-22

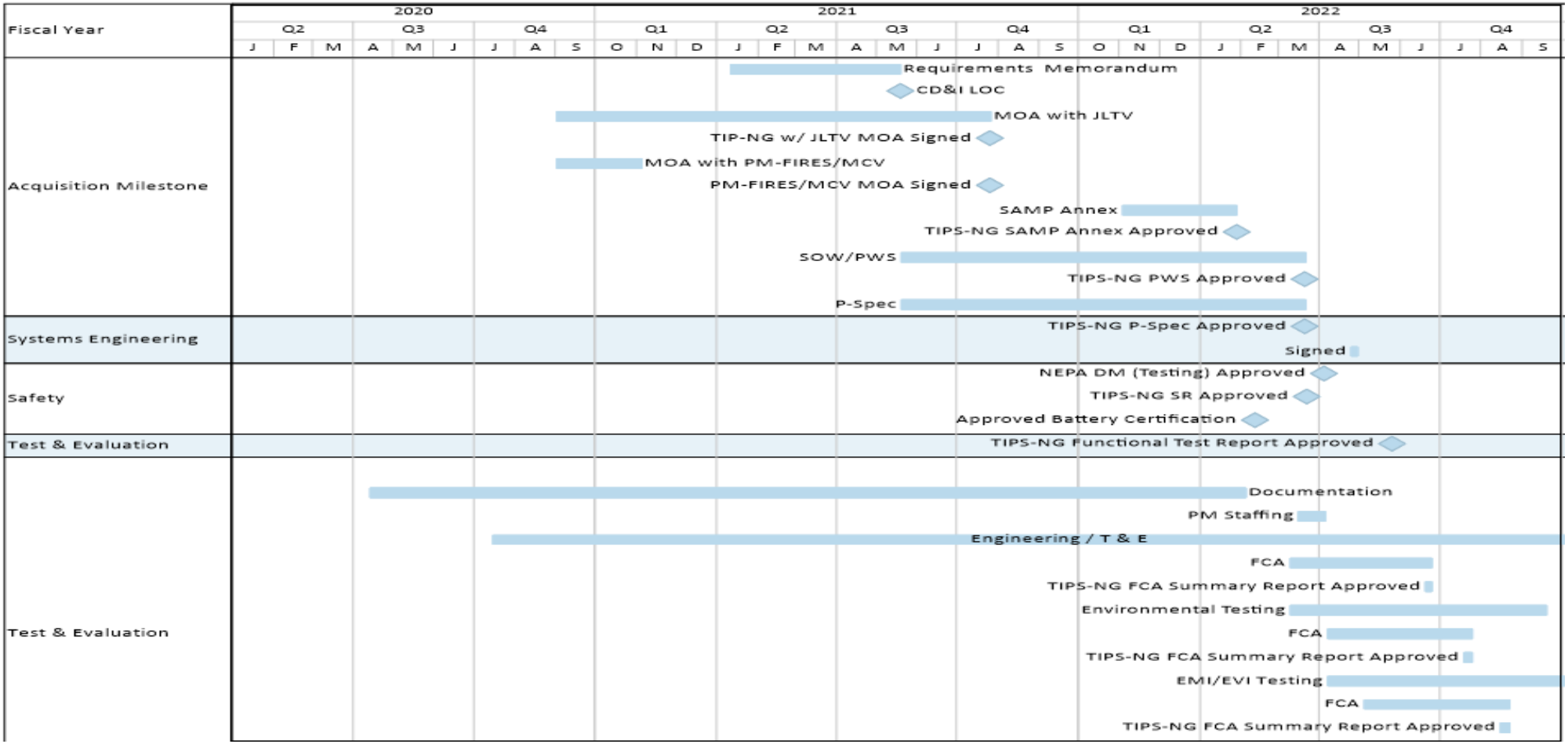


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

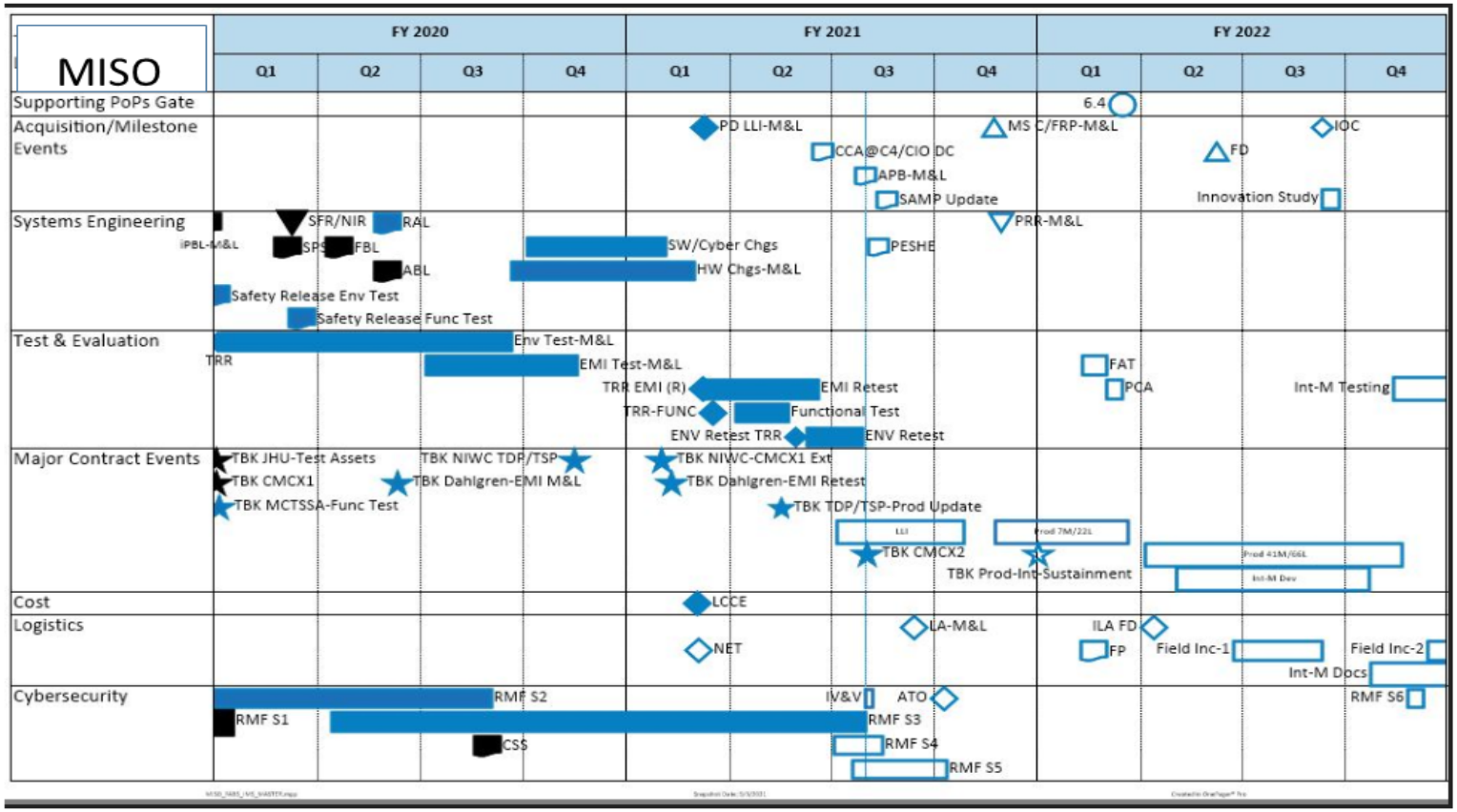


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

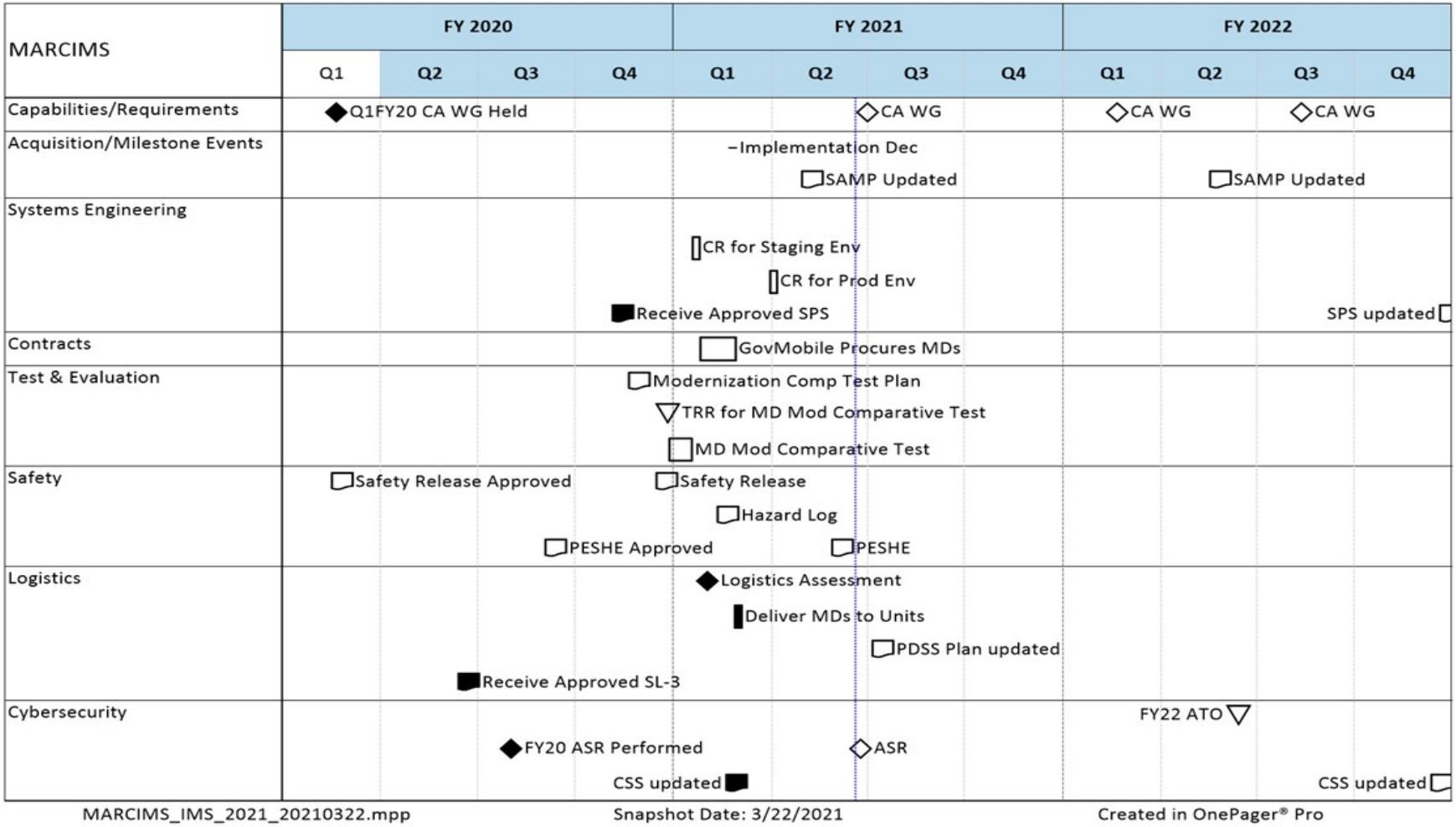


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SIGMAN				
Inc 2 Production Decision	1	2022	1	2022
MS C	2	2022	2	2022
Inc 2 Fielding Decision	4	2022	4	2022
DMS (Formerly PAS)				
PAS/ DMS NEXGEN TIPS R&D Upgrades	4	2020	4	2022
MISO				
FABS Functional Testing (Medium & Light)	1	2021	2	2021
FABS Environmental ReTesting (Medium & Light)	2	2021	3	2021
FABS Production (Medium & Light)	3	2021	4	2022
FABS MS C / LRIP (Medium & Light)	4	2021	4	2021
FABS IOC (Medium & Light)	4	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy												Date: May 2021
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*				Project (Number/Name) 3773 / *Fire Coordination and Sensors*			
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
3773: *Fire Coordination and Sensors*	7.614	7.650	7.983	8.047	-	8.047	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 3773 Fire Coordination and Sensors funds the development of critical United States Marine Corps (USMC) fire support coordination, targeting, and digital interoperability systems required for the employment of air and ground fires. Fire Coordination and Sensors provides the systems needed to develop and integrate a digital networked sensor to shooter kill chain supporting the Marine Air Ground Task Force (MAGTF). Key systems included are:

Family of Target Acquisition Systems (FTAS) - The FTAS provides the MAGTF the capability to locate, identify, and attack enemy indirect fire weapons systems and observe and direct friendly artillery fire. The FTAS consists of the AN/TPQ-46 Firefinder Radar, the AN/TPQ-49 Lightweight Counter Mortar Radar (LCMR), AN/TPQ-54 LCMR, Ground Counter Fire Sensor (GCFS), and the AN/TSQ-267 Target Acquisition System. The GCFS is a passive acoustic sensor enabling the detection of enemy indirect fire weapons in a contested environment. The FTAS is critical in the execution of counterfire and the integration of target acquisition information enabling attack by MAGTF assets. The FTAS also provides artillery firing units the ability to conduct artillery registration and other supporting missions. The FTAS encompasses the equipment required to support target acquisition within the target acquisition platoon and is resident in the headquarters battery of each artillery regiment. The program will initiate development of replacement sensor systems and continue to address system issues that arise due to Diminishing Manufacturing Sources and Material Shortage (DMSMS) items within the FTAS.

Advanced Field Artillery Tactical Development System (AFATDS) FoS consists of two programs: AFATDS, and Mobile Shelters consisting of the Mobile Tactical Shelter (MTS) and Mobile Command Vehicle (MCV) Shelter. Due to Force Design and the new requirement for a Joint Light Tactical Vehicle (JLTV) mounted shelter, the decision was made to transition from MTS to MCV Shelter in FY21. AFATDS automates the fire planning, tactical/ technical fire direction, and fire support coordination required to facilitate sea control/denial and support maneuver from the sea and subsequent operations ashore. AFATDS integrates all supporting arms assets with the MAGTF, such as mortars, cannon artillery, rockets and missiles, close air support, and naval surface fires support systems. The MTS is integrated with the High Mobility Multipurpose Wheeled Vehicle (HMMWV) while the new MCV Shelter is integrated with the JLTV. The MCV Shelter is primarily dedicated to housing AFATDS and other fire support systems. MCV Shelter enhances the capabilities and survivability of the fire support element by enabling rapid emplacement and displacement, and supports communications on the move. The MCV Shelter supports operations in all environmental conditions, day or night.

Target Hand-Off System (THS) - The THS addressed a Marine Corps operational requirement for a lightweight, handheld, and accurate target acquisition engagement coordination system. THS provides MAGTF Commanders with the only man-portable target location and video downlink capability that allows Air Officers and Fire Support Coordinators to prosecute identified targets. The THS' advance interoperability capability provides the MAGTF Commander with the only portable target acquisition system able to interoperate with all target prosecution platforms available on the battlefield. The THS is designed for the Forward Air Controllers (FACs), Forward Observers (FOs), Fire Support Teams (FSTs), Firepower Control Teams (FCTs), Tactical Air Control Parties (TACPs) and Reconnaissance Teams to quickly

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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acquire targets in day, night and near-all-weather visibility conditions, in order to conduct precise, rapid indirect surface fire support, Naval Surface Fire Support (NSFS) and Close Air Support (CAS).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: FTAS	1.285	1.660	1.678	0.000	1.678
Articles:	-	-	-	-	-
FY 2021 Plans: - Completed development of GCFS-R system prototype 1. - Initiated development of GCFS-R system prototype 2. ***FY 2022 Base Plans:*** - Continue development of GCFS-R systems prototype 2. - Conduct updates to the LCMR tech refresh technical data package. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The net increase of $0.018M from FY 2021 to FY 2022 is due to the development completion of the GCFS-R prototype 1, increase in the development of GCFS-R prototype 2, and the LCMR tech data refresh.					
Title: AFATDS	5.939	5.905	5.952	0.000	5.952
Articles:	-	-	-	-	-
Description: This title will consolidate AFATDS cost elements into one line for the FY 2022 budget. ***FY 2021 Plans:*** - Completed development, test, and evaluation of AFATDS software version 6.8.1.2. - Initiated software version 6.8.1.3. - Continued AFATDS version 7.0 software development. - Completed interoperability testing for AFATDS 6.8.1.2 software between all required Joint C2 and Fires systems. - Initiated and complete MCV Shelter prototype build of 5 shelters. ***FY 2022 Base Plans:*** - Complete development of AFATDS software version 6.8.1.3. - Initiate test and evaluation support for AFATDS software version 6.8.1.3. - Continue AFATDS version 7.0 software development					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Initiate and complete environmental, safety, and developmental testing for the MCV Shelter. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The increase of $0.047M from FY 2021 to FY 2022 is due to increased MCV Shelter testing.					
Title: THS	0.426	0.418	0.417	0.000	0.417
Articles:	-	-	-	-	-
FY 2021 Plans: - Initiated software development of Link-16 message formats to support digital communications with CAS platforms and Command and Control (C2) networks. ***FY 2022 Base Plans:*** - Complete software development of Link-16 messages formats to support digital communications with CAS platforms and C2 networks. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The decrease of $0.001M from FY 2021 to FY 2022 is due to inflation.					
Accomplishments/Planned Programs Subtotals	7.650	7.983	8.047	0.000	8.047

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/473300: *Family of Target Acq Systems (FTAS)*	2.650	3.002	3.049	-	3.049	-	-	-	-	-	-
• PMC/473301: *Advanced Field Artillery Tactical Data Family of Systems (AFATDS FoS)*	13.017	14.067	14.214	-	14.214	-	-	-	-	-	-
• PMC/473302: *Target Handoff System (THS)*	2.439	2.487	2.527	-	2.527	-	-	-	-	-	-

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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

Family of Target Acquisition Systems (FTAS) - FTAS consists of 4 major components: AN/TPQ-46 Firefinder Radar, AN/TPQ-49 Lightweight Counter Mortar Radar (LCMR), Ground Counter Fire Sensor (GCFS), and the AN/TSQ-267 Target Acquisition System. The replacement of the AN/TPQ-46 by the Ground/Air Task Oriented Radar (G/ATOR) began in 2018. Activities during 2020 and beyond will be limited to maintaining the authority to operate (ATO) accreditation and supporting remaining systems. USMC activities on the AN/TPQ-49 are escalating due to the fact the US Army divested from the AN/TPQ-49, and the USMC assumed the responsibilities of the primary inventory control activity (PICA).

AFATDS is managed through the Army Futures Command, Fire Support Command and Control, Aberdeen Proving Ground MD. R&D efforts for the next AFATDS v7.0.X.X, will be a combined effort between the software developer, the Army PM, and the USMC for software through the Defense Information Systems Agency (DISA). Current software
enhancements are performed by the U.S. Army, Fort Sill, OK for v6.8.X.X. MCV was designated as an ACAT IV (M) program in September 2020. MCV will use competitively awarded Other Transactions Authority agreements for prototyping and development and will transition to a FAR contract for production. MCSC will administer both OTA and FAR contracting actions.

THS: The acquisition of components (software/hardware) for the THS initiative will maximize the use of existing Commercial-Off-The-Shelf (COTS), Government-Off-The-Shelf (GOTS), Non-Developmental Item (NDI), and Government Furnished Equipment (GFE). Software must maintain compatibility with five Programs of Record (POR) and seven Operational Flight Programs (OFP). Equipment is purchased from multiple vendors with Space and Missile Defense Command (SMDC) acting as the lead integrator for the USMC.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FTAS (GCFS-R)	MIPR	AMRDEC : Huntsville, AL	1.054	0.308	Feb 2020	0.687	Apr 2021	0.776	Feb 2022	-		0.776	-	-	-
FTAS (LCMR)	MIPR	TYAD : Tobyhanna, PA	0.318	0.094	Jul 2020	0.096	Nov 2020	0.098	Nov 2021	-		0.098	-	-	-
THS	MIPR	Army (AVMC) : Huntsville, AL	0.662	0.426	Jan 2020	0.000		0.000		-		0.000	-	-	-
THS	MIPR	SMDC : Huntsville, AL	0.000	0.000		0.418	Jan 2021	0.000		-		0.000	-	-	-
THS	MIPR	NAWC : China Lake	0.000	0.000		0.000		0.417	Nov 2021	-		0.417	-	-	-
AFATDS v6.8.1.3 SW Dev	MIPR	DISA/CECOM : Belleville, IL	2.267	1.197	Feb 2020	1.059	Feb 2021	0.531	Feb 2022	-		0.531	-	-	-
AFATDS v6.8.1.2 SW Dev	MIPR	FSED : Ft. Sill, OK	1.843	0.320	Jan 2020	0.000		0.000		-		0.000	-	-	-
AFATDS v6.8.1.2 SW Dev	MIPR	ARDEC : Ft. Sill, OK	0.305	0.330	Mar 2020	0.000		0.000		-		0.000	-	-	-
AFATDS v7.0 SW Dev	C/FFP	CECOM/MITRE : Aberdeen, MD	1.068	3.759	Dec 2019	0.668	Dec 2020	0.688	Dec 2021	-		0.688	-	-	-
AFATDS MCV Development	C/CPFF	Oshkosh : Oshkosh, WI	0.000	0.000		0.828	May 2021	0.000		-		0.000	-	-	-
AFATDS MCV Prototype	C/CPFF	Oshkosh : Oshkosh, WI	0.000	0.000		2.075	May 2021	0.000		-		0.000	-	-	-
AFATDS v7.0 SW Dev	C/CPFF	DISA/DITCO : Aberdeen, MD	0.000	0.000		0.851	Mar 2021	1.000	Nov 2021	-		1.000	-	-	-
All Prior Year Cumulative Funds	Various	Various : Various	0.097	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	7.614	6.434		6.682		3.510		-		3.510	-	-	N/A

Remarks

AFATDS (DISA/DITCO: Aberdeen, MD) - Army re-scoped 7.0 and 6.8.1.3 software development and awarded Leidos a new contract in March of FY21 causing a reduction in Marine Corps' funding required.
FTAS - Net increase of $0.091M from FY 2021 to FY 2022 is a result of the completion of the GCFS-R prototype 1, increase in the development of GCFS-R prototype 2.
THS - In FY 2022 software development effort transitions from Space and Missile Defense Command (SMDC) to NAWC -WD China Lake.

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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FTAS Engineering Support	WR	NSWCDD : Dahlgren, VA	0.000	0.513	Nov 2019	0.500	Mar 2021	0.429	Nov 2021	-		0.429	-	-	-
		Subtotal	0.000	0.513		0.500		0.429		-		0.429	-	-	N/A

Remarks

FTAS - Decrease of $0.071M from FY 2021 to FY 2022 is a result of the development completion of the GCFS-R prototype 1. Realigned prior year Support funds from Product Development and Test Evaluation, to properly account for Dahlgren engineering support.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AFATDS SW Testing	C/FFP	ARDEC : Ft. Sill, OK	0.000	0.000		0.424	Feb 2021	0.436	Apr 2022	-		0.436	-	-	-
AFATDS MCV Testing	C/CPFF	MCSC : MCSC: Various	0.000	0.333	Sep 2020	0.000	Jun 2021	2.501	Nov 2021	-		2.501	-	-	-
AFATDS SW & MCV Testing	C/CPFF	NIWC : Charleston, SC	0.000	0.000		0.000		0.796	May 2022	-		0.796	-	-	-
		Subtotal	0.000	0.333		0.424		3.733		-		3.733	-	-	N/A

Remarks

AFATDS - FY 2022 increase due to MCV environmental and safety testing.
AFATDS (MCSC: Various) - Testing will be conducted at Nevada Automotive Testing Center, Oshkosh, Center for Advanced Product Evaluation, and NIWC Charleston, SC.
FTAS - Realigned prior year funds from Product Development and Test Evaluation to Support, to properly account for Dahlgren engineering support.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FTAS	C/CPFF	CECOM/MITRE : Ft. Monmouth, NJ	0.000	0.370	Nov 2019	0.377	Nov 2020	0.375	Nov 2021	-		0.375	-	-	-
		Subtotal	0.000	0.370		0.377		0.375		-		0.375	-	-	N/A

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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

FTAS - Realigned FY 2021 funds from Product Development to Management Services to properly account for the MITRE contract support.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	7.614	7.650		7.983		8.047		-		8.047	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3773 / *Fire Coordination and Sensors*

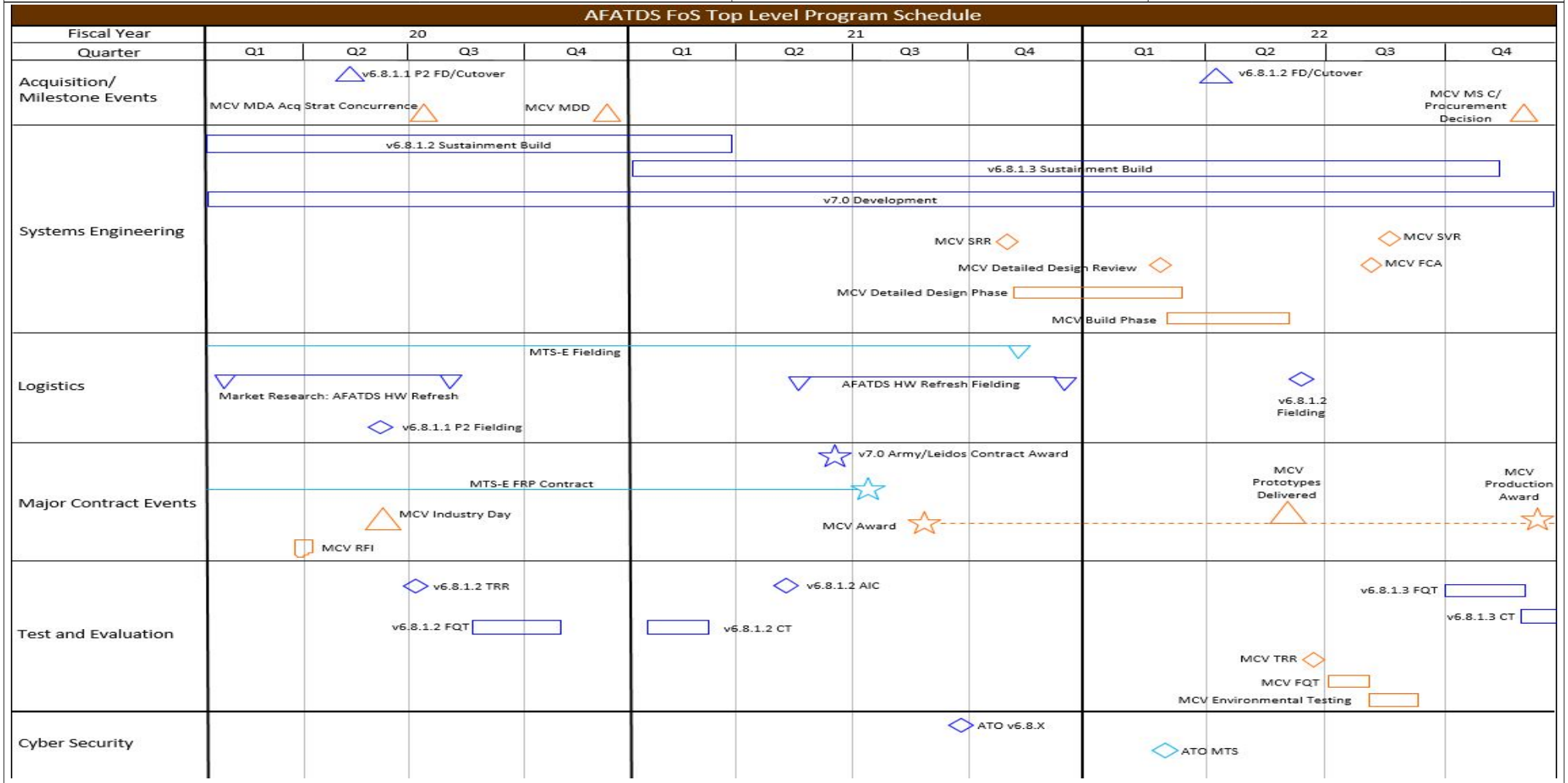

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3773 / *Fire Coordination and Sensors*

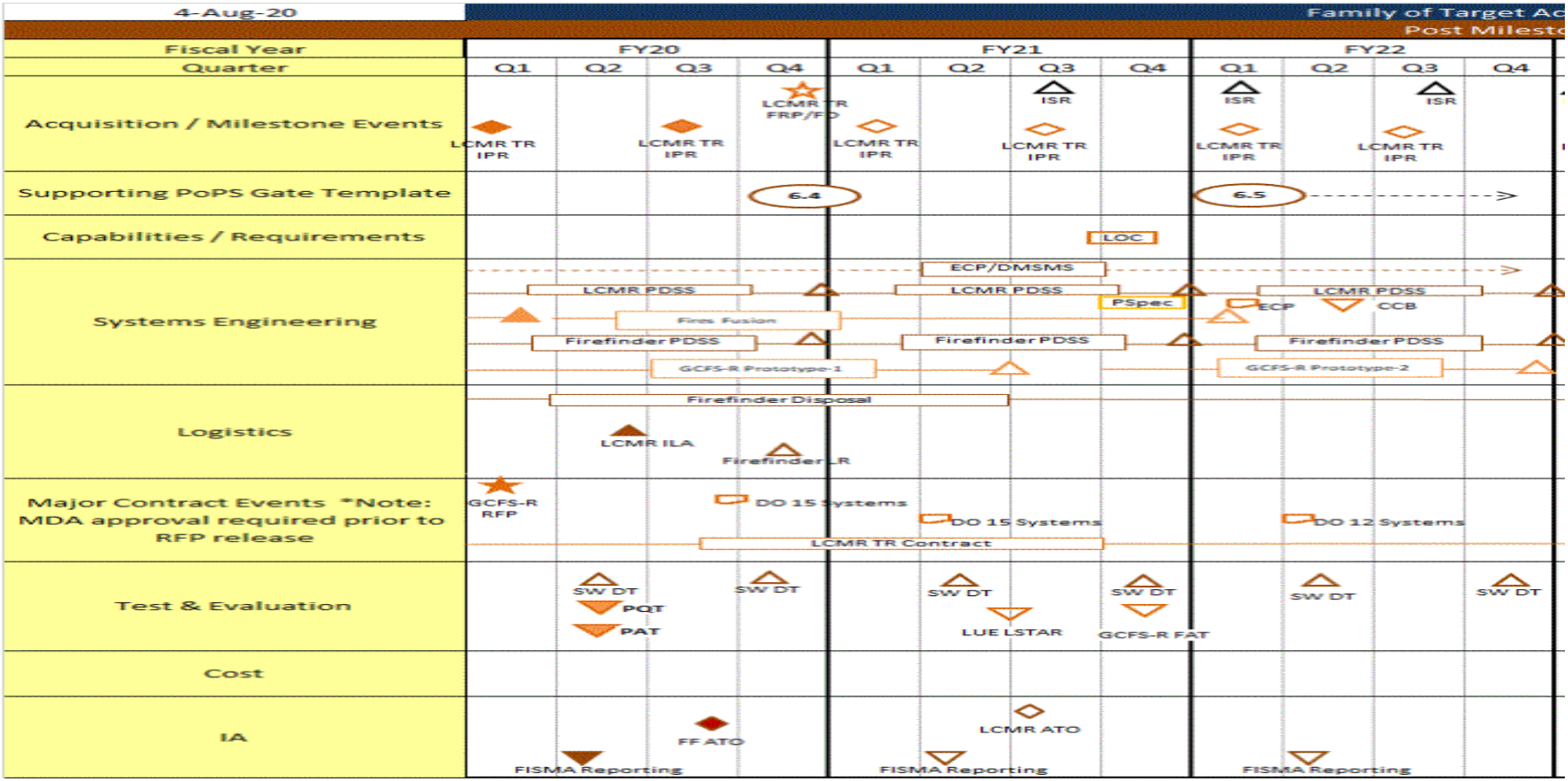

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3773 / *Fire Coordination and Sensors*

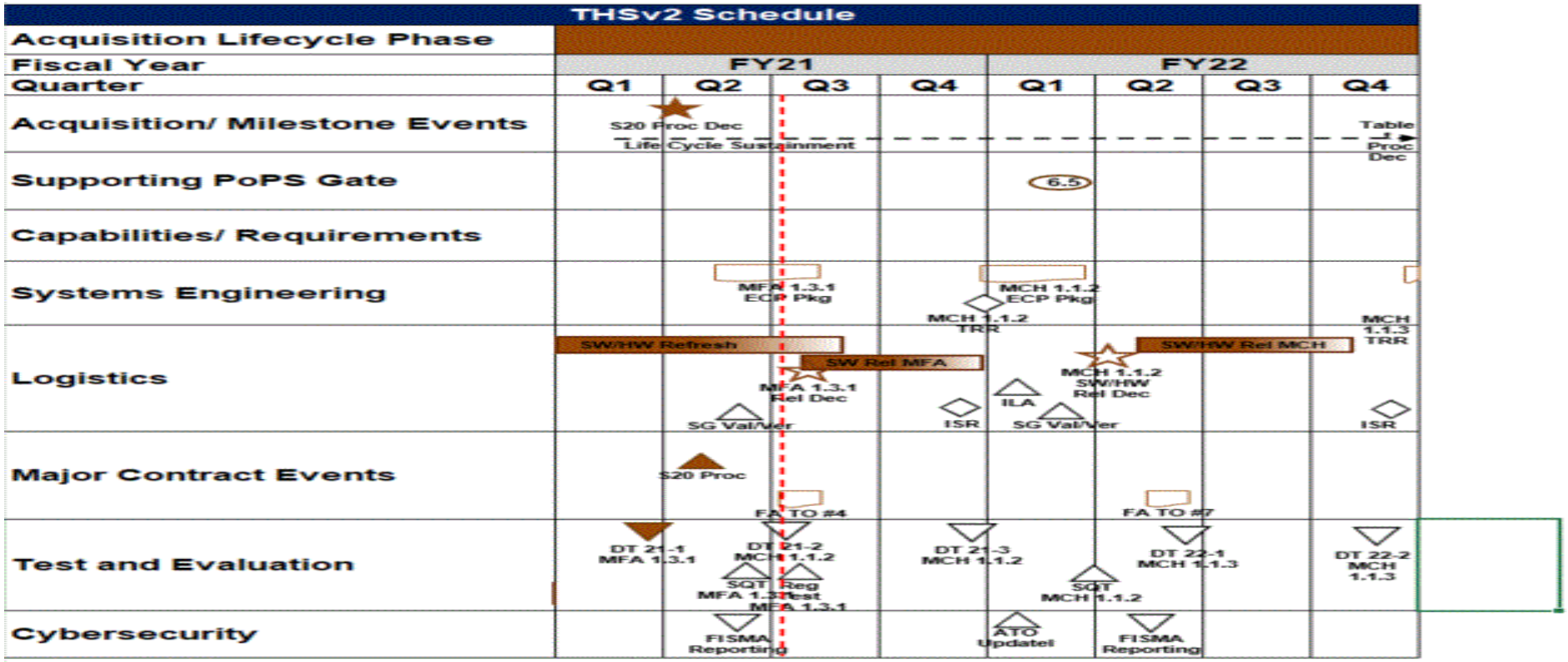

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3773				
AFATDS 7.0 Software Development	2	2021	4	2022
AFATDS MCV Shelter Development	3	2021	2	2022
AFATDS MCV Shelter Environmental Test and User Evaluation	2	2022	3	2022
MCV Procurement Decision	3	2022	3	2022

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COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	12.540	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Networking On The Move (NOTM): The NOTM capability provides beyond line of sight (BLOS) satellite communication (SATCOM) and terrestrial line of sight (LOS) transmissions, and access to applications and web-services required to digitally facilitate tasks spanning the entire range of military operations (ROMO) both at the halt (ATH) and while on the move (OTM) in multiple domains, sea, air and land, and while transitioning between. Currently the USMC has two NOTM programs NOTM Ground Combat Vehicle (NOTM-GCV) and NOTM Airborne (NOTM-A) with a requirement to field vehicle kits for the following platforms: MATV, HMMWV, JLTV, AAV, ACV, ULTV, KC-130J and MV-22. One NOTM system for HMMWV, MATV, JLTV, and AAV consists of three vehicles (1 Point of Presence and 2 Staff Vehicles). One NOTM system for ULTV, ACV, and airborne platforms consists of only one POP vehicle. As platforms are divested or new platforms developed, NOTM requirements will be updated to incorporate them as required. NOTM funding profile is atypical and will present increases and decreases as new platforms are added or divestment actions drive necessary retrofits.

Electronic Warfare (USMC CREW) System: The Multi-Function Electronic Warfare System (EWS)is a modular, multi-role electronic warfare system that will provide an initial electronic warfare capability, meeting a subset of user requirements from the Urgent Statement of Need. Through incremental development efforts, the program management office will incorporate additional capabilities. The Multi-Function Electronic Warfare system consists of the Modular Vehicle Power Adapter (MVPA) II Control Module, band amplifiers, Modi II band module kit, and the appropriate Vehicle Integration Kit (VIK) for mounted configuration (the A kit). The Multi-Function Electronic Warfare system is compatible with the Modi II as an Electronic Attack/Electronic Warfare Support (EA/ES) system, and is upgradable as modular solutions are developed through component, software, and firmware modifications. Required capability upgrades include networking, geolocation, enhanced electronic attack, user interface improvements, direction finding, and increased frequency coverage. This request seeks funding for the foundational upgrades - networking, geolocation, enhanced electronic attack, and user interface improvements.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021
Congressional Add: Shipboard integration and AI networking/NOTM ***FY 2020 Accomplishments:*** N/A ***FY 2021 Plans:*** N/A	4.238	0.000
Congressional Add: Multi function electronic warfare ***FY 2020 Accomplishments:*** N/A ***FY 2021 Plans:*** N/A	8.302	0.000
Congressional Adds Subtotals	12.540	0.000

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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• RDTE/0206313M/C2275: *NOTM*	1.020	4.244	7.057	-	7.057	-	-	-	-	-	-
• RDTE/0206313M/ C2274: *USMC CREW*	10.330	0.000	0.000	-	0.000	-	-	-	-	-	-
• PMC/4631AA: *NOTM*	51.373	26.236	53.834	-	53.834	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Networking on the Move (NOTM): NOTM will use an evolutionary acquisition strategy that leverages Commercial-Off-The-Shelf (COTS) and Government-Off-The-Shelf (GOTS) technology to procure, sustain, and meet emerging requirements. The design of the system provides for internal growth capability through an open system architecture enabling technology refresh to extend the system's life, maintain interoperability, Information Assurance (IA) compliance, and reduce costs due to Diminishing Manufacturing Sources and Material Shortages (DMSMS). It is envisioned that technology refresh will occur on the NOTM hardware and software periodically due to component obsolescence, user-driven requests for improvements, IA compliance, and mission-related requirements. Refresh will include investments to incorporate evolving capabilities to ensure compatibility with other systems, create lighter and more efficient equipment, and keep pace with evolving software requirements. End-of-life equipment refresh is expected throughout the program's life cycle and may be managed through kit purchases, replacement through Engineering Change Proposals (ECPs), or as replacement parts as equipment is repaired.

Electronic Warfare (USMC CREW) System: Engineering Change Proposals (ECPs) will be developed to increase capabilities through a modification of the existing Modi II procurement contract awarded to the original equipment manufacturer (OEM), Sierra Nevada Corporation (SNC). The PMO will modify the SNC contract scope to include dismounted and mounted variants (Modi II and MVPA II respectively) as a Family of Systems (FoS) and allow the inclusion of the development of additional capabilities through ECPs to both systems. The Modi II contract extension and modification is planned to be completed March 2020 to add additional CLINs for Research and Development (R&D) and engineering services for ECPs, logistical and engineering data and support for new capabilities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USMC CREW	TBD	MCSC : QUANTICO, VA	0.000	8.302	Aug 2020	0.000		0.000		-		0.000	-	-	-
NOTM	C/FFP	NIWC/PAC : San Diego, CA	0.000	3.554	Apr 2020	0.000		0.000		-		0.000	-	-	-
NOTM	WR	NSWC CRANE : Crane, IN	0.000	0.684	Apr 2020	0.000		0.000		-		0.000	-	-	-
		Subtotal	0.000	12.540		0.000		0.000		-		0.000	-	-	N/A

Remarks

FY 2020 efforts support NOTM Shipboard Integration, AI networking, and Multi function electronic warfare which is a one year congressional add.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	12.540		0.000		0.000		-		0.000	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
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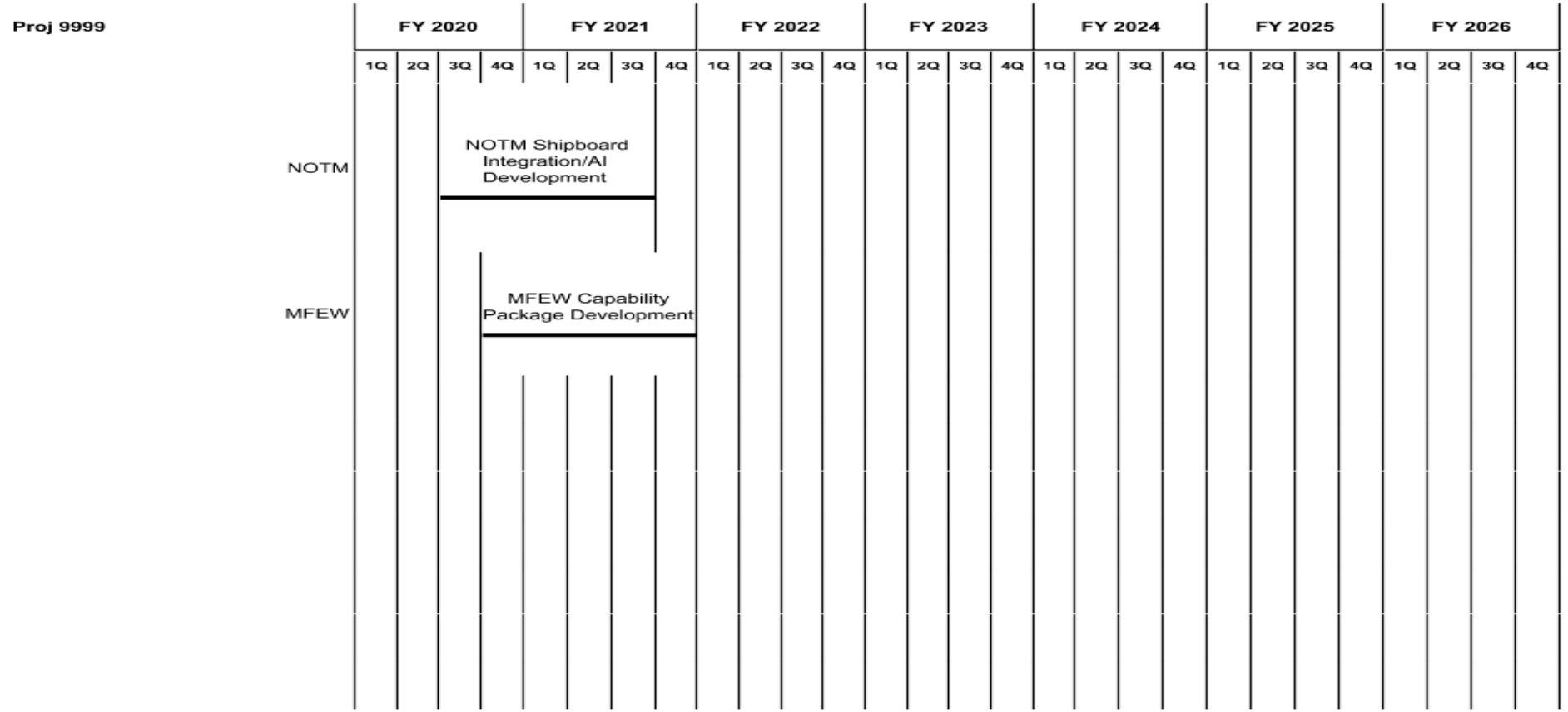

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9999				
NOTM: NOTM Shipboard Integration/AI Development	3	2020	3	2021
MFEW: MFEW Capability Package Development	4	2020	4	2021