Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy											Date: March 2019	
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 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
Total Program Element	1,528.475	170.529	188.813	143.317	15.000	158.317	116.043	87.659	120.011	120.754	Continuing	Continuing
2270: *Exp Indirect Fire Gen Supt Wpn Sys*	279.659	30.122	19.553	29.620	-	29.620	20.704	21.011	23.206	27.460	Continuing	Continuing
2273: *Air Ops Cmd & Control (C2) Sys*	437.381	11.130	8.467	5.397	-	5.397	6.685	7.660	5.913	6.000	Continuing	Continuing
2274: *Command & Control Warfare Sys*	45.162	8.087	11.992	10.454	-	10.454	11.698	12.360	27.399	22.547	Continuing	Continuing
2275: *Marine Corps Tactical Radio Systems*	60.097	20.994	23.288	13.348	-	13.348	15.176	14.604	17.551	17.892	Continuing	Continuing
2276: *Comms Switching and Control Sys*	44.494	2.068	1.675	1.778	-	1.778	1.815	1.653	1.686	1.719	Continuing	Continuing
2277: *System Engineering and Integration*	48.106	6.732	4.263	5.071	-	5.071	5.530	5.429	5.133	5.235	Continuing	Continuing
2278: *Air Defense Weapons System*	91.427	28.794	89.735	49.535	15.000	64.535	36.523	12.351	26.052	26.570	Continuing	Continuing
2510: *MAGTF CSSE & SE*	300.033	1.123	1.307	1.814	-	1.814	0.962	0.972	0.991	1.010	Continuing	Continuing
3099: *Radar System*	192.155	9.520	16.435	13.708	-	13.708	5.651	1.462	1.498	1.528	Continuing	Continuing
3772: *Information Related Capabilities (IRC)*	0.000	0.000	4.188	4.791	-	4.791	3.310	2.002	2.261	2.306	Continuing	Continuing
3773: *Fire Coordination and Sensors*	0.000	0.000	7.910	7.801	-	7.801	7.989	8.155	8.321	8.487	Continuing	Continuing
9999: *Congressional Adds*	29.961	51.959	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	81.920

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 2020 Navy	Date: March 2019
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*

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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	123.825	174.779	148.367	-	148.367
Current President's Budget	170.529	188.813	143.317	15.000	158.317
Total Adjustments	46.704	14.034	-5.050	15.000	9.950
• Congressional General Reductions	-	-0.568			
• Congressional Directed Reductions	-	-1.528			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.405	0.000			
• SBIR/STTR Transfer	-4.098	0.000			
• Program Adjustments	0.000	32.260	9.735	-	9.735
• Rate/Misc Adjustments	0.002	-16.130	-14.785	15.000	0.215
• Congressional General Reductions Adjustments	-0.327	-	-	-	-
• Congressional Directed Reductions Adjustments	-5.083	-	-	-	-
• Congressional Add Adjustments	53.805	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2018	FY 2019
Project: 9999: *Congressional Adds*		
Congressional Add: *Radar System Development*	12.554	0.000
Congressional Add: *FOB Protection - Counter-UAS*	39.405	0.000
Congressional Add Subtotals for Project: 9999	51.959	0.000
Congressional Add Totals for all Projects	51.959	0.000

Change Summary Explanation

The FY 2020 funding request was reduced by $4.00M to account for the availability of prior year execution balances.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy	Date: March 2019
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*

The net decrease of $30.496M between FY19 and FY20 is primarily due to the following major program adjustments within the PE:

1) Expeditionary Indirect Fire Gen Supt Weapon Sys funding increase of $10.067M from FY19 to FY20 to support continued development, design, test, and integration of emerging capabilities across the Handheld Command and Control (H2C2) Family of Systems (FoS).

2) Tactical Radio Systems decrease of $9.940M from FY19 to FY20 reflects transition of NOTM variants from initial design, development, and prototyping to technology refresh cycles. Decrease also reflects completion of VSAT-M Refresh test asset procurement and 80% of testing events as well as the completion of Terrestrial Wideband Transmission System (TWTS) engineering support.

3) Air Defense Weapons System decrease of $25.200M from FY19 to FY20 (Base and OCO), Ground Based Air Defense (GBAD) Increment I, also known as Marine Integrated Air Defense System (MADIS), is due to the migration from research and development to production efforts following Milestone C decision in 1QFY20.

4) Air Operation Command and Control (C2) System funding decrease of $3.070M from FY19 to FY20 reflects reduction in Theater Battle Management Core System (TBMCS) software development support requirements.

5) Radar Systems decrease of $2.727M from FY19 to FY20 reflects USMC decision to defer all modernization except the IFF Mode 5/S level 1 upgrade and upgrades specifically to prevent system obsolescence such as the Digital Receive Exciter efforts.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
2270: *Exp Indirect Fire Gen Supt Wpn Sys*	279.659	30.122	19.553	29.620	-	29.620	20.704	21.011	23.206	27.460	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Beginning in FY19, AFATDS FoS and THS funding has been realigned from project 2270, Command Post Systems. Beginning in FY19, FTAS funding has been realigned from project 3099 Radar Systems. Realignment of efforts to new projects in FY19 and beyond reflects USMC Program Management Office (PMO) reorganization to improve support of USMC OPFOR.

A. Mission Description and Budget Item Justification

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. TSOA's RDTEN funding increased by $3.819M between FY19 and FY20 for three reasons. First, TSOA will be upgraded to enable being hosted on emerging Tactical Cloud environments. Second, TSOA will add additional TDS platforms (e.g., Networking on The Move, Combat Data Network) which will be capable of hosting the SOI. Third, in conjunction with the Office of Naval Research (ONR), TSOA will initiate Artificial Intelligence (AI)/Neural Network (NN) capabilities resulting in a Cognitive Assistant in support of course of action (COA) decision making.

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.

Identity Dominance System-MC (IDS-MC) - 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 will enable 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 will display 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 and law enforcement operations 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, law enforcement, 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.

The Expeditionary Forensics and Exploitation Capability (EFEC) provides tactical and operational level forensic technical exploitation capabilities required by Marine Corps forward deployed forces. EFEC provides organic Marine Corps forensic capabilities that support the tactical commander with agile, ruggedized, and scalable expeditionary forensic capabilities 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 and ruggedized construction for deployment of sensitive forensic testing and analysis equipment. Through the ability to recognize, protect, collect, analyze, store and share items with forensic value, EFEC positively identifies personnel and trace chemicals/elements; forensically exploits document and media in the commander's area of operation; and scientifically links identities and networks to places, events, and activities. It is a critical enabler to force protection, Counter Improvised Explosive Device, intelligence, targeting and law enforcement operations.

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. Changes in SW development and testing requirements resulted in additional resources required to complete tasks. Ongoing H2C2 source selection efforts resulted contract award for Sample H2C2 equipment and DT Hardware moving from FY18 to FY19.

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.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

The overall increase of $10.067M is principally due to TSOA compliance efforts for MAGTF C2, initial software development support services for GCSS TOS, and the development and certification of software for H2C2.

Advanced Field Artillery Tactical Data Family of Systems (AFATDS FoS) - AFATDS FoS consists of three programs, AFATDS, Back Up Computer System (BUCS) and Mobile Tactical Shelter (MTS). The AFATDS automates the fire planning, tactical fire direction, and fire support coordination required to support maneuver from the sea and subsequent operations ashore. AFATDS integrates all supporting arms assets within the MAGTF such as mortars, cannon artillery, rockets and missiles, close air support, and naval surface fire support systems. BUCS is a hand-held computer system designed to provide a backup to the AFATDS in computing ballistic firing solutions, as well as provide survey and Meteorological functions in support of artillery. Additionally BUCS is the primary ballistic firing solution system during Ship To Objective Maneuver (STOM) and for the Expeditionary Fire Support System (EFSS). The MTS is a Lightweight Multi-purpose Shelter mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV) which protects both the AFATDS and operators from the environment. MTS enables rapid emplacement and displacement of fire support elements and provides networked communications on the move. Realignment of effort to new Project (C3773) in FY 19 and beyond reflects USMC Program Management Office (PMO) reorganization to improve support of USMC OPFOR.

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 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 in 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 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). FY19 increase is due to a realignment from PROJECT C2270 to PROJECT C3773. Realignment of effort to new Project in FY 19 and beyond reflects USMC Program Management Office (PMO)reorganization to improve support of USMC OPFOR.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: MAGTF C2: Product Development	7.133	10.022	12.869	0.000	12.869
Articles:	-	-	-	-	-
FY 2019 Plans: -Complete the addition of Authoritative Data Sources from Intelligence, Logistics and Operations to the TSOA in order to meet identified Marine Corps gaps. -Complete the improvement and enhancement of MAGTF interoperability using the service oriented architecture provided by the TSOA. -Complete development of applications for the Marine Corps Software Resource Center to enable more effective information sharing and the ability for Marines to make more informed and timely decisions.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
-Complete the research and development for the deployment of the TSOA to additional Marine Corps platforms (NOTM and MCEITS). ***FY 2020 Base Plans:*** -Will initiate and complete the release of new logistics applications and intelligence connectors. -Will initiate harvested cloud data which enables higher fidelity Machine Learning models. This will enable future Cognitive Assistants. -Will initiate MCSRC support for USMC Common Handheld devices for lightweight applications. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase in the amount of $2.847M from FY19 to FY20 is driven by the CD&I mandated TSOA compliance utilizing automated test harnesses and the initiation of hosting TSOA on multiple Tactical Cloud environments (e.g., USMC deployed, U.S. Navy). This will enable Marines to fight as they train using tactical applications in both garrison and deployed environments.					
Title: MAGTF C2: Support Costs	1.369	1.387	1.387	0.000	1.387
Articles:	-	-	-	-	-
FY 2019 Plans: - Continue system engineering support for system integration, configuration management, and technical assessments. ***FY 2020 Base Plans:*** -Will continue system engineering support for system integration, configuration management, and technical assessments of software products. ***FY 2020 OCO Plans:*** N/A					
Title: MAGTF C2: Test and Evaluation	1.659	1.057	2.081	0.000	2.081
Articles:	-	-	-	-	-
FY 2019 Plans: -Continue to participate in technical working groups in support of test and engineering.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
-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 2020 Base Plans:*** -Will initiate TSOA compliance testing with USMC Tactical Data Systems (TDS). -Will continue to participate in technical working groups in support of test and engineering. -Will 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 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $1.024M from FY19 to FY20 reflects the initiation of testing of TSOA Compliance with USMC Tactical Data Systems.					
Title: MAGTF C2: Management Services	1.301	1.296	1.296	0.000	1.296
Articles:	-	-	-	-	-
FY 2019 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). ***FY 2020 Base Plans:*** -Will 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). ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** No significant change from FY 2019 to FY 2020					
Title: AFATDS: Software Development and Integration	3.603	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Articles:	-	-	-	-	-
FY 2019 Plans: - See Project 3773. ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A					
Title: AFATDS: Test and Evaluation	0.305	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: - See Project 3773. ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A					
Title: AFATDS: Management Services	0.650	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: - See Project 3773. ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A					
Title: THS: Product Development	1.629	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
See Project 3773. ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A					
Title: EFEC: Test and Evaluation ***Articles:*** ***FY 2019 Plans:*** -Initiate coordination with government labs and industry for product testing and integration of Commercial Off-the-Shelf (COTS) capabilities for the EFEC system design. ***FY 2020 Base Plans:*** -Continue coordination with the government labs and industry for product testing and integration of Commercial Off-the-Shelf (COTS) capabilities for the EFEC system design. -Initiate User Assessments in support of EFEC MS C/FRP. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** $0.15M increase in FY20 to support performance testing and user assessments in preparation for a MS C/FRP in FY21.	0.000 -	0.400 -	0.550 -	0.000 -	0.550 -
Title: IDS-MC: Support ***Articles:*** ***FY 2019 Plans:*** -Continue to develop, assess, and integrate technologies for the IDS-MC Increment 2 integrated system design. ***FY 2020 Base Plans:*** - Initiate software engineering support. - Initiate laboratory integration to facilitate test and network integration cybersecurity updates, to include Technical Readiness Reviews and software patching.	0.847 -	0.976 -	0.987 -	0.000 -	0.987 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Initiate Market Research for IDS-MC Increment 3 technical refresh. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** No significant change from FY 2019 to FY 2020.					
Title: JBC-P: Test and Evaluation ***Articles:*** ***FY 2019 Plans:*** -Continue laboratories integration to facilitate test and network integration test events. ***FY 2020 Base Plans:*** -Will continue laboratory integration to facilitate network integration and test events in support of mounted and dismounted interoperability. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $0.256M is due to interoperability test requirements between dismounted C2SA equipment and mounted JBCP equipment.	0.523 -	0.035 -	0.291 -	0.000 -	0.291 -
Title: JBC-P: Software and Product Development/Integration ***Articles:*** ***FY 2019 Plans:*** -Continue coordination with the software and product development teams to assist in the development and integration of the JBC-P software capability and associated testing. -Continue software engineering support to provide appropriate government direction in design and development of software. ***FY 2020 Base Plans:*** -Will continue laboratory integration to facilitate network integration and test events in support of mounted and dismounted interoperability. ***FY 2020 OCO Plans:***	0.493 -	0.000 -	0.588 -	0.000 -	0.588 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $0.588M supports mounted and dismounted interoperability and integration.					
Title: GCCS TCO: Product Development	0.000	0.000	2.000	0.000	2.000
Articles:	-	-	-	-	-
FY 2019 Plans: N/A ***FY 2020 Base Plans:*** -Will initiate software development support services for a modernization transition from a client/server relationship to a cloud based enterprise solution. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $2.0M between FY19 and FY20 funds initial software development support services for a modernization transition from a client/server relationship to a cloud based enterprise solution.					
Title: H2C2: Test and Evaluation	9.622	4.238	3.285	0.000	3.285
Articles:	-	-	-	-	-
FY 2019 Plans: -Award MCH Hardware contract which includes Sample hardware required to complete software testing, hardware testing and integration testing. -Complete software qualification test events 3-5. -Complete critical release/Block 1 software testing. -Continue RMF process, initiating and conducting cyber security testing throughout all planned test events in support of accreditation process. -Complete DT Hardware testing. -Continue integration testing between MCH hardware and software. -Continue interoperability testing between MCH system and JBC-P and other C2 systems. -Continue JTIC testing ***FY 2020 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
-Initiate Operational Test of Handheld end user devices, software application, peripheral equipment and integration into C2 programs of record, specifically JBC-P, JTCW and AFATDS. -Complete RMF process and cybersecurity testing in support of accreditation. -Continue interoperability testing between MCH system and JBC-P and other C2 systems. -Complete JTIC testing -Complete integration testing between MCH hardware and software. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $0.953M in FY20 is due to Hardware/software integration testing requirements and operational test requirements for the MCH system in FY20.					
Title: H2C2: Integration Engineering Support	0.988	0.142	4.286	0.000	4.286
Articles:	-	-	-	-	-
FY 2019 Plans: -Continue to provide support for sustained engagement with various industry providers, quick look technology excursions, and experimentation demonstrations for high risk emerging technology. -Continue efforts for software and hardware integration to attain NSA Commercial Solutions for Classified (CSfC) approved capability package in support accreditation and testing. -Continue to support development of Operational Architecture for the H2C2 program, required to support completion of OT and JTIC events. ***FY 2020 Base Plans:*** -Develop, design, and integrate 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. Complete support development of Operational Architecture for the H2C2 program, required to support completion of OT and JTIC events. -Provide support for sustained engagement with various industry providers, quick look technology excursions and experimentation demonstrations for high risk emerging technology, to include emergent CSfC components and Type 1 encryption technologies.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
-Complete software and hardware engineering integration efforts for NSA CSfC approved capability packages in support of integration tests. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $4.144M from FY19 to FY20 funds the ongoing development, and certification of software to include code analysis, and cybersecurity engineering required to incorporate emerging technologies to counter emerging threats and maintain Authority to Operate (ATO).					
Accomplishments/Planned Programs Subtotals	30.122	19.553	29.620	0.000	29.620

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• PMC/4631DD: *AFATDS*	10.199	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	39.218
• PMC/4631FF: *JBC-P*	41.678	17.056	8.159	-	8.159	8.334	8.490	8.700	8.874	Continuing	Continuing
• PMC/4631GG: *THS*	17.985	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	28.775
• RDTE/C3773A: *AFATDS*	0.000	5.391	5.763	-	5.763	5.911	6.042	6.165	6.288	Continuing	Continuing
• PMC/4652AA: *IDS-MC*	0.000	0.971	4.945	-	4.945	1.007	0.000	0.000	0.000	Continuing	Continuing
• RDTE/C3773B: *THS*	0.000	0.678	0.409	-	0.409	0.418	0.426	0.435	0.444	Continuing	Continuing
• PMC/4733AA: *THS*	0.000	24.739	2.439	-	2.439	2.487	2.537	2.588	2.640	Continuing	Continuing
• PMC/4733BB: *AFATDS*	0.000	12.521	12.852	-	12.852	15.531	15.908	16.245	16.570	Continuing	Continuing
• PMC/4652BB: *EFEC*	0.750	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.750
• PMC/4631EE: *GCCS TCO*	0.689	0.380	1.409	-	1.409	9.499	0.096	0.098	0.100	Continuing	Continuing
• PMC/LI4631: *H2C2*	0.000	0.000	11.516	-	11.516	0.000	0.000	0.000	0.000	0.000	11.516

Remarks

D. Acquisition Strategy

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).

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

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 Marine Corps program office will participate in all design and readiness reviews and joint operational testing events.

Identity Dominance System (IDS): For IDS-MC Increment 1, the Program Office acquisition strategy leveraged the Navy's IDS Program and provided funding to enhance the Navy's system to meet Marine Corps requirements. The Marine Corps program office participated in all design and technical reviews as well as the FOT&E activities. For IDS-MC Increment 2, the Marine Corps Program Office is collaborating with the Army and Navy to leverage market research and technology demonstration data for system hardware and software selection in support of technical refresh. The Marine Corps plans to conduct technology assessments in FY17, conduct agile test events in FY18, MS C/FRP in FY19, and Fielding Decision(with system procurement) in FY20. and The long-term goal is to equip the Marine with a user-friendly biometric authentication technology that will be employed throughout DoD to deny the enemy freedom of movement within the populace and positively identify known insurgents within an Area of Responsibility (AOR). R&D efforts will be a combined effort with the Navy PM and the USMC for IDS Increment 2, and led by the Marine Corps Program Office.

EFEC: EFEC will use the evolutionary approach for technology insertion and enhancements. For EFEC Increment 2, the Marine Corps will conduct market research and technology demonstrations with industry to replace EFEC Increment 1 hardware and software. The acquisition of components (software/hardware) will maximize the use of existing COTS, Non-Developmental Items, and Government Furnished Equipment for the Information Technology components.

AFATDS: AFATDS is managed through Army CECOM, Aberdeen Proving Ground, MD. R&D efforts for the next AFATDS version will be a combined effort between the software developer, the Army PM, and the USMC for software enhancements through DISA. Current software enhancements are performed at Army, Ft. Sill, OK.

THS: The acquisition of components (software/hardware) for the THS initiative will maximize the use of existing COTS, Government-Off-The-Shelf (GOTS), Non-Developmental Item (NDI), and Government Furnished Equipment (GFE). Software is transitioning to a government owned baseline. Software must maintain compatibility with five Programs of Record (POR) and seven Operational Flight Programs (OFP).

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 Dismount requirements and C2SA interoperability with existing C2 POR. Contract award for Sample H2C2 hardware planned for FY18 delayed until FY19 due to ongoing Source Selection efforts and USMC priorities.

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 Warfare Systems Center Atlantic (SSC-A). Program

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

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

E. Performance Metrics

Milestone Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MAGTF C2	C/CPFF	SPAWAR : Charleston, SC	52.524	3.433	Apr 2018	6.658	Apr 2019	2.815	Apr 2020	-		2.815	Continuing	Continuing	Continuing
MAGTF C2	WR	NSWC : Dahlgren, VA	12.124	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MAGTF C2.	C/CPFF	SPAWAR : San Diego, CA	6.355	1.200	Jun 2018	1.000	May 2019	2.986	May 2020	-		2.986	Continuing	Continuing	Continuing
MAGTF C2	WR	SSC A : Charleston, SC	8.032	2.000	Apr 2018	1.500	Feb 2019	1.004	Feb 2020	-		1.004	Continuing	Continuing	Continuing
MAGTF C2	WR	NRL : Washington, DC	1.983	0.500	Mar 2018	0.864	Jun 2019	0.864	Jun 2020	-		0.864	Continuing	Continuing	Continuing
MAGTF C2	C/CPFF	NSWC2 : Dahlgren, VA	0.560	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MAGTF C2	C/CPFF	ARL : Penn State, PA	0.000	0.000		0.000		1.200	Apr 2020	-		1.200	0.000	1.200	-
MAGTF C2	C/CPFF	NG : San Diego, CA	0.000	0.000		0.000		4.000	Dec 2019	-		4.000	0.000	4.000	-
AFATDS	MIPR	DISA : Belleville, IL	0.964	1.890	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
AFATDS	MIPR	Army/SEC : Fort Sill, OK	1.500	1.713	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
THS	C/IDIQ	NAVSEA : Washington, DC	0.331	0.000		0.000		0.000		-		0.000	0.000	0.331	-
THS	WR	NAWC - China Lake : China Lake, CA	0.754	0.000		0.000		0.000		-		0.000	0.000	0.754	-
THS	MIPR	AMRDEC : Huntsville, AL	6.748	1.629	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
JBC-P	WR	SPAWAR : Charleston, SC	3.510	0.236	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
JBC-P	C/CPFF	SPAWAR2 : Charleston, SC	0.822	0.005	Dec 2017	0.000		0.003	Dec 2019	-		0.003	Continuing	Continuing	Continuing
JBC-P	C/CPFF	NSWC2 : Crane, IN	0.399	0.000		0.000		0.291	Dec 2019	-		0.291	Continuing	Continuing	Continuing
JBC-P	WR	DPSS : China Lake, CA	0.565	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JBC-P	WR	DPSS2 : China Lake, CA	1.382	0.000		0.000		0.000		-		0.000	0.000	1.382	-
JBC-P	C/FFP	MCTSSA : Camp Pendleton, CA	0.000	0.252	Nov 2017	0.000		0.294	Dec 2019	-		0.294	0.000	0.546	-
Prior Years Cumulative Funding	Various	Various : Various	133.461	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
GCCS TCO	C/CPFF	SPAWAR : Charleston, SC	0.000	0.000		0.000		2.000	May 2020	-		2.000	0.000	2.000	-
		Subtotal	232.014	12.858		10.022		15.457		-		15.457	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MAGTF C2	WR	SPAWAR : San Diego, CA	6.155	1.369	Feb 2018	1.387	Feb 2019	1.387	Feb 2020	-		1.387	0.000	10.298	-
H2C2 Integration Eng	WR	SPAWAR : Charleston, SC	3.484	0.000		0.000		1.053	Dec 2019	-		1.053	0.000	4.537	-
H2C2 Integration Eng	C/FFP	SPAWAR : Charleston, SC	0.664	0.000		0.000		0.578	Dec 2019	-		0.578	0.000	1.242	-
H2C2 Integration Eng	WR	NSWC Crane : Crane, IN	1.108	0.676	Nov 2017	0.000		0.732	Nov 2019	-		0.732	0.000	2.516	-
H2C2 Integration Eng	WR	NSWC China Lake : China Lake, CA	0.615	0.000		0.000		1.623	Dec 2019	-		1.623	0.000	2.238	-
H2C2 Integration Eng	C/FFP	NSWC Crane2 : Crane, IN	0.060	0.000		0.000		0.300	Oct 2019	-		0.300	Continuing	Continuing	Continuing
H2C2 Integration Eng	Various	MCSC : Stafford, VA	0.100	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
H2C2 Integration Eng	C/FFP	MITRE : Stafford, VA	0.000	0.312	Oct 2018	0.000		0.000		-		0.000	0.000	0.312	-
H2C2 Integration Eng	WR	MCTSSA : Camp Pendleton, CA	0.000	0.000		0.142	Mar 2019	0.000		-		0.000	0.000	0.142	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
IDS-MC	C/FFP	MITRE : Mc Lean, Va	0.703	0.000		0.156	Nov 2018	0.000		-		0.000	0.000	0.859	-
IDS-MC	MIPR	AFRL : Wright-Paterson AFB, OH	0.000	0.760	Aug 2018	0.000		0.000		-		0.000	0.000	0.760	-
IDS-MC	WR	SPAWAR : Charleston, SC	0.556	0.087	Mar 2018	0.398	Mar 2019	0.987	Mar 2020	-		0.987	Continuing	Continuing	Continuing
IDS-MC	C/CPFF	ARDEC : Picatinny Arsenal, NJ	0.000	0.000		0.300	Jun 2019	0.000		-		0.000	0.000	0.300	-
IDS-MC	C/BA	JITC : Fort Huachuca, AZ	0.000	0.000		0.122	Apr 2019	0.000		-		0.000	0.000	0.122	-
		Subtotal	13.445	3.204		2.505		6.660		-		6.660	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AFATDS	MIPR	Army/SEC : Ft. Sill, OK	0.000	0.305	Mar 2018	0.000		0.000		-		0.000	0.000	0.305	-
JBCP	C/FFP	NSWC Corona5 : Norco, CA	0.345	0.523	Jun 2018	0.035	Jun 2019	0.291	Jun 2020	-		0.291	0.000	1.194	-
H2C2	WR	SPAWAR1 : Charleston, SC	0.000	1.762	Dec 2017	0.000		0.000		-		0.000	0.000	1.762	-
H2C2	WR	NSWC Corona : Norco, CA	0.000	6.312	Dec 2017	0.000		0.250	Dec 2019	-		0.250	0.000	6.562	-
H2C2	C/FFP	SPAWAR2 : Charleston, SC	0.000	0.858	Dec 2017	0.000		0.500	Dec 2019	-		0.500	0.000	1.358	-
H2C2	C/FFP	NSWC Corona1 : Norco, CA	0.000	0.000	Dec 2017	0.000		0.000		-		0.000	0.000	0.000	-
H2C2	WR	NSWC China Lake : China Lake, CA	0.000	0.000	Dec 2017	0.000		0.000		-		0.000	0.000	0.000	-
H2C2	WR	MCOTEA : Quantico, VA	0.000	0.000		0.000		1.785	Dec 2019	-		1.785	0.000	1.785	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
H2C2	C/FFP	MCTSSA : Camp Pendleton, CA	0.000	0.690	Nov 2018	0.000		0.750	Dec 2019	-		0.750	0.000	1.440	-
H2C2	C/FFP	MCSC : Quantico, VA	0.000	0.000		4.238	Feb 2019	0.000		-		0.000	0.000	4.238	-
MAGTF C2	WR	NRL : Washington, DC	3.158	0.859	Feb 2018	0.500	Jun 2019	0.000		-		0.000	0.000	4.517	-
MAGTF C2	C/ FFPLOE	MCTSSA : Camp Pendleton, CA	3.491	0.800	Jan 2018	0.557	Apr 2019	2.081	Apr 2020	-		2.081	0.000	6.929	-
EFEC	WR	SPAWAR3 : Charleston, SC	0.000	0.000		0.400	Nov 2018	0.550	Nov 2019	-		0.550	0.000	0.950	-
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	15.688	0.000		0.000		0.000		-		0.000	0.000	15.688	-
		Subtotal	22.682	12.109		5.730		6.207		-		6.207	0.000	46.728	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MAGTF C2	C/CPFF	CECOM/MITRE : Ft. Monmouth, NJ	7.527	1.301	Mar 2018	1.296	Jun 2019	1.296	Jun 2020	-		1.296	Continuing	Continuing	Continuing
AFATDS	C/CPFF	CECOM/MITRE : Ft. Monmouth, NJ	0.700	0.650	Jan 2018	0.000		0.000		-		0.000	0.000	1.350	-
Prior Years Cumulative Funding	Various	Various : Various	3.291	0.000		0.000		0.000		-		0.000	0.000	3.291	-
		Subtotal	11.518	1.951		1.296		1.296		-		1.296	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	279.659	30.122		19.553		29.620		-		29.620	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Funding increase of $10.015M from FY19 to FY20 reflect software development and operational testing, and allows for technology insertion for modernization.

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

H2C2

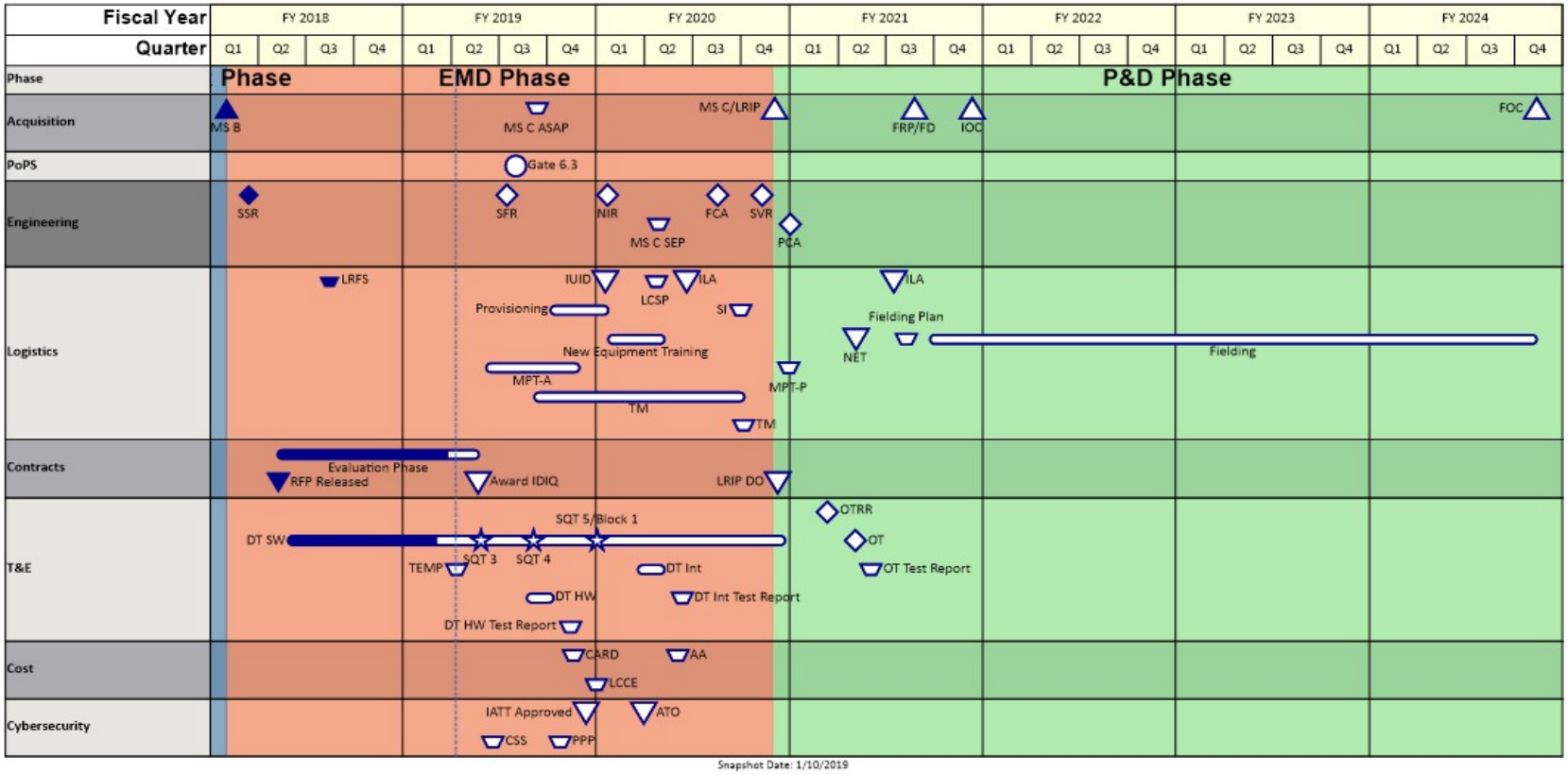
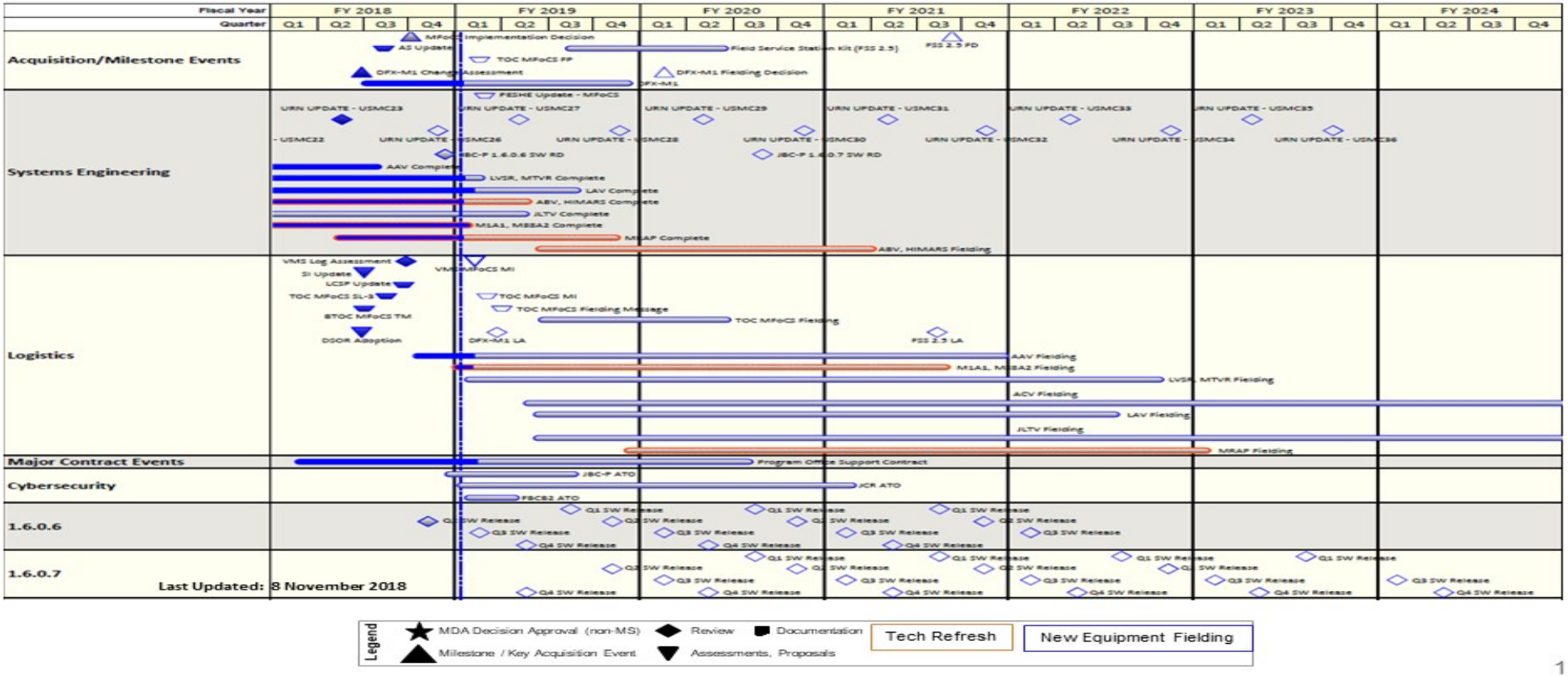


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2270 / *Exp Indirect Fire Gen Supt Wpn Sys*

MARINE CORPS SYSTEMS COMMAND
Equipping our MARINES

JBC-P FoS Program Schedule



1

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

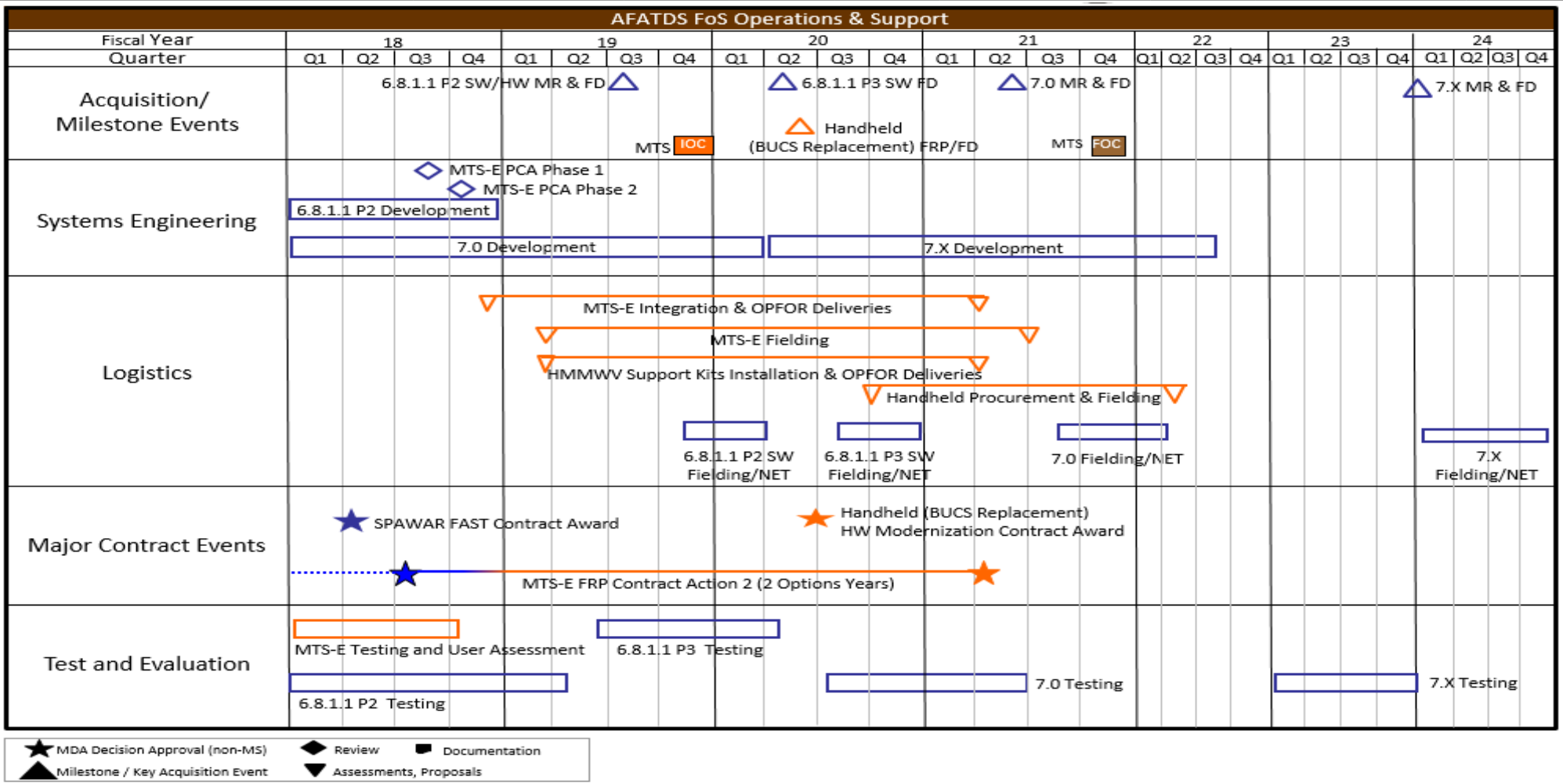


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2270 / *Exp Indirect Fire Gen Supt Wpn Sys*

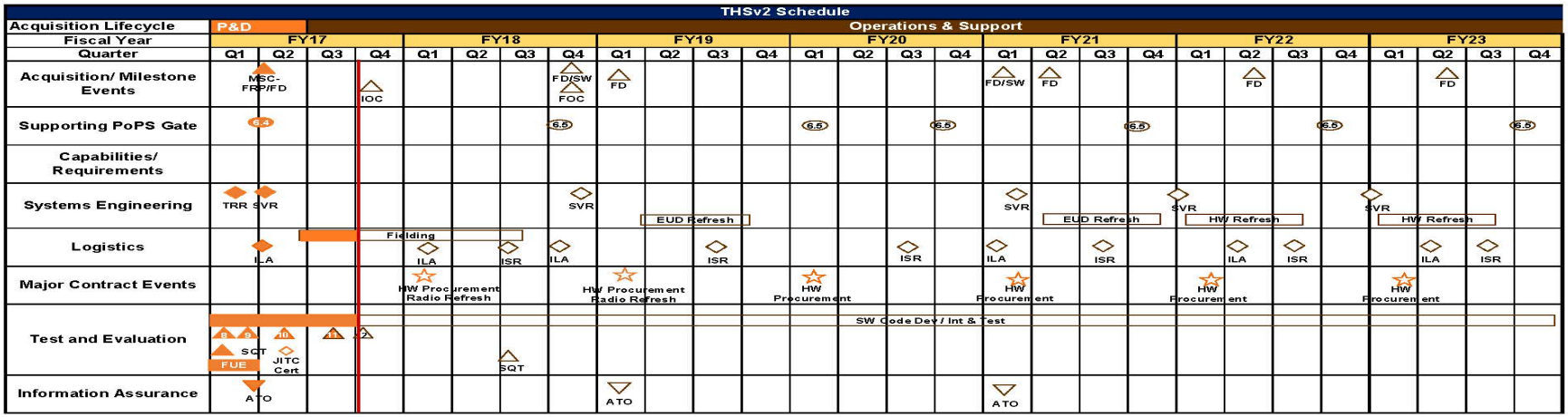
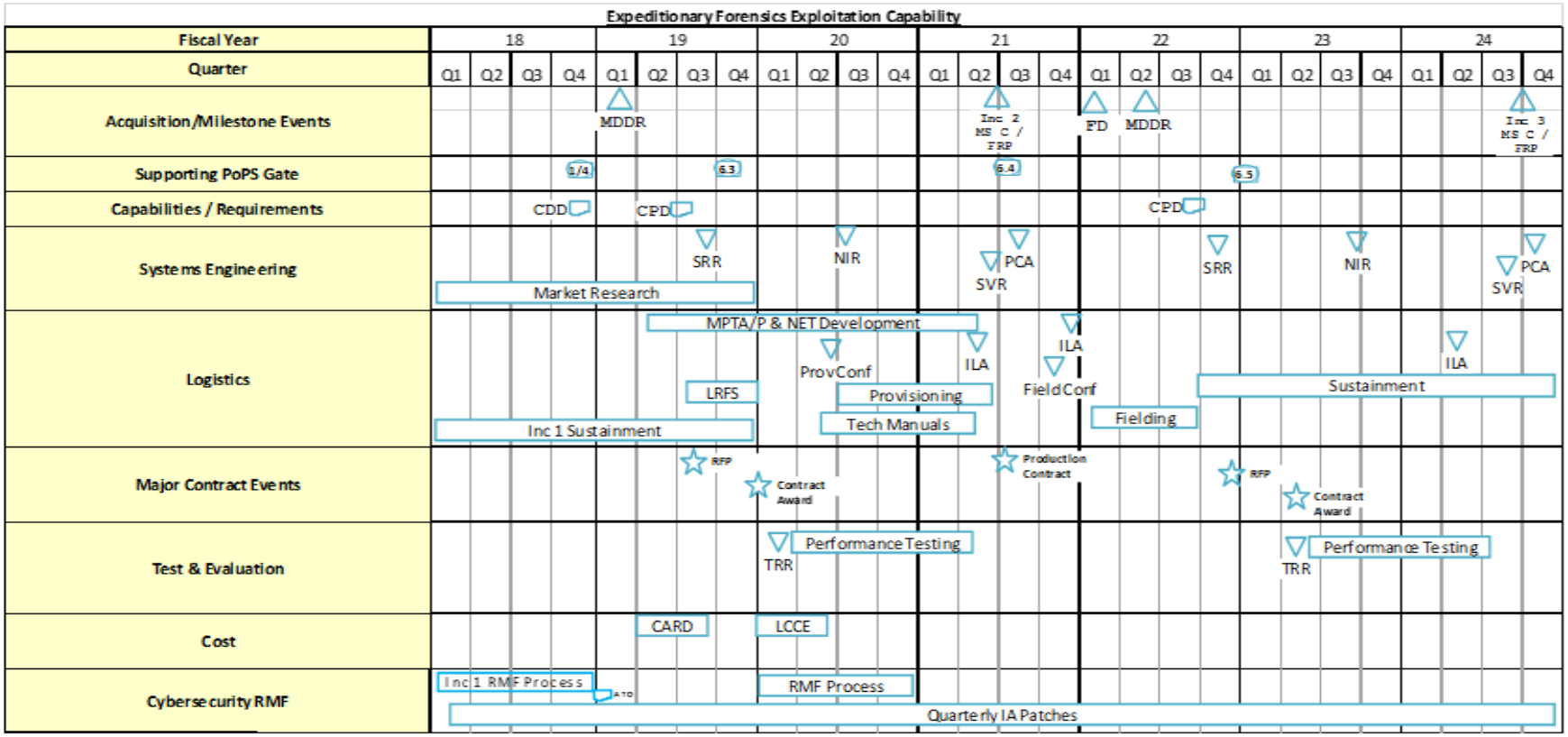


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2270 / *Exp Indirect Fire Gen Supt Wpn Sys*

FOUO (U)

EFEC Program Schedule



FOUO (U) 1

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

FOUO (U)

IDS-MC Program Schedule

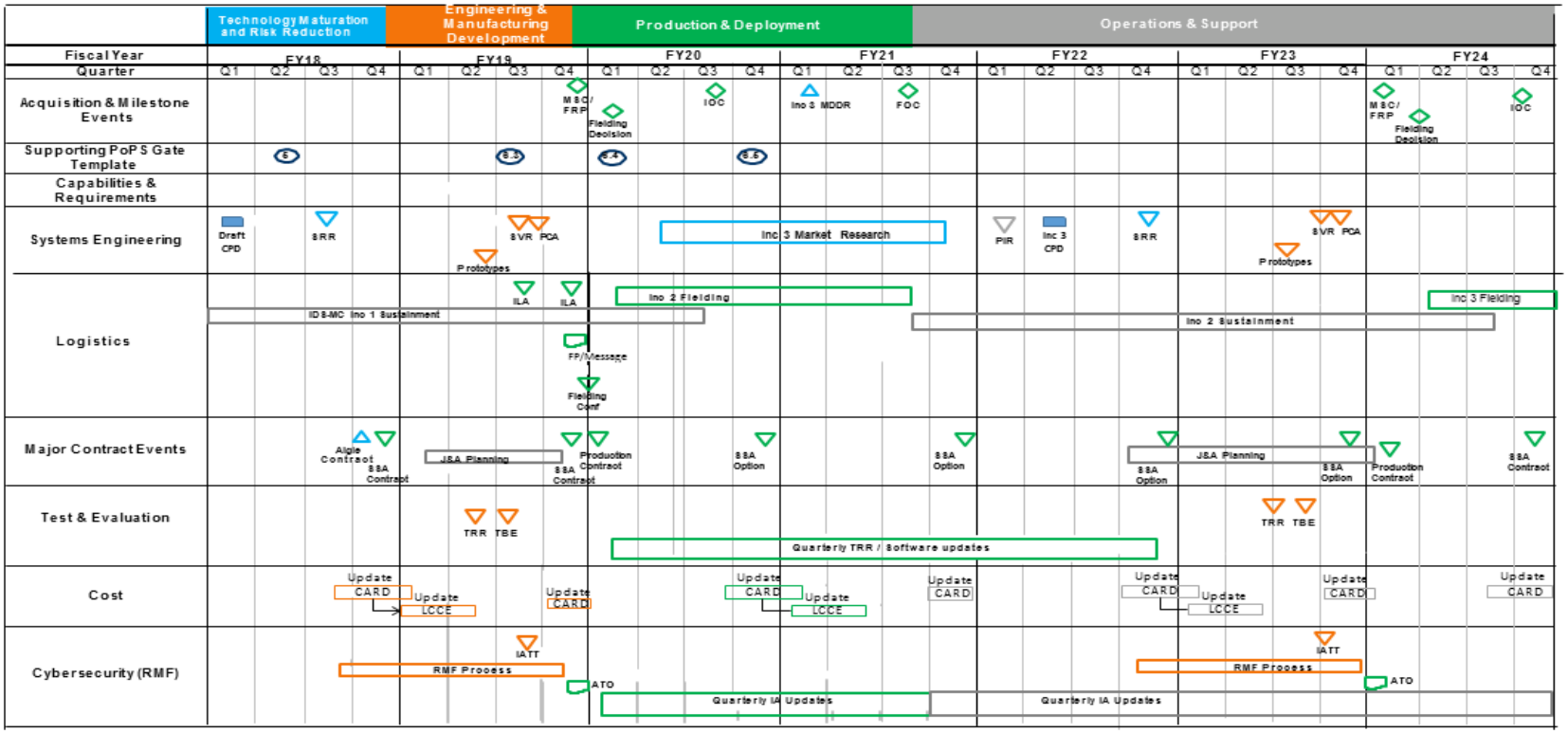


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2270 / *Exp Indirect Fire Gen Supt Wpn Sys*

MAGTF C2 Program Schedule

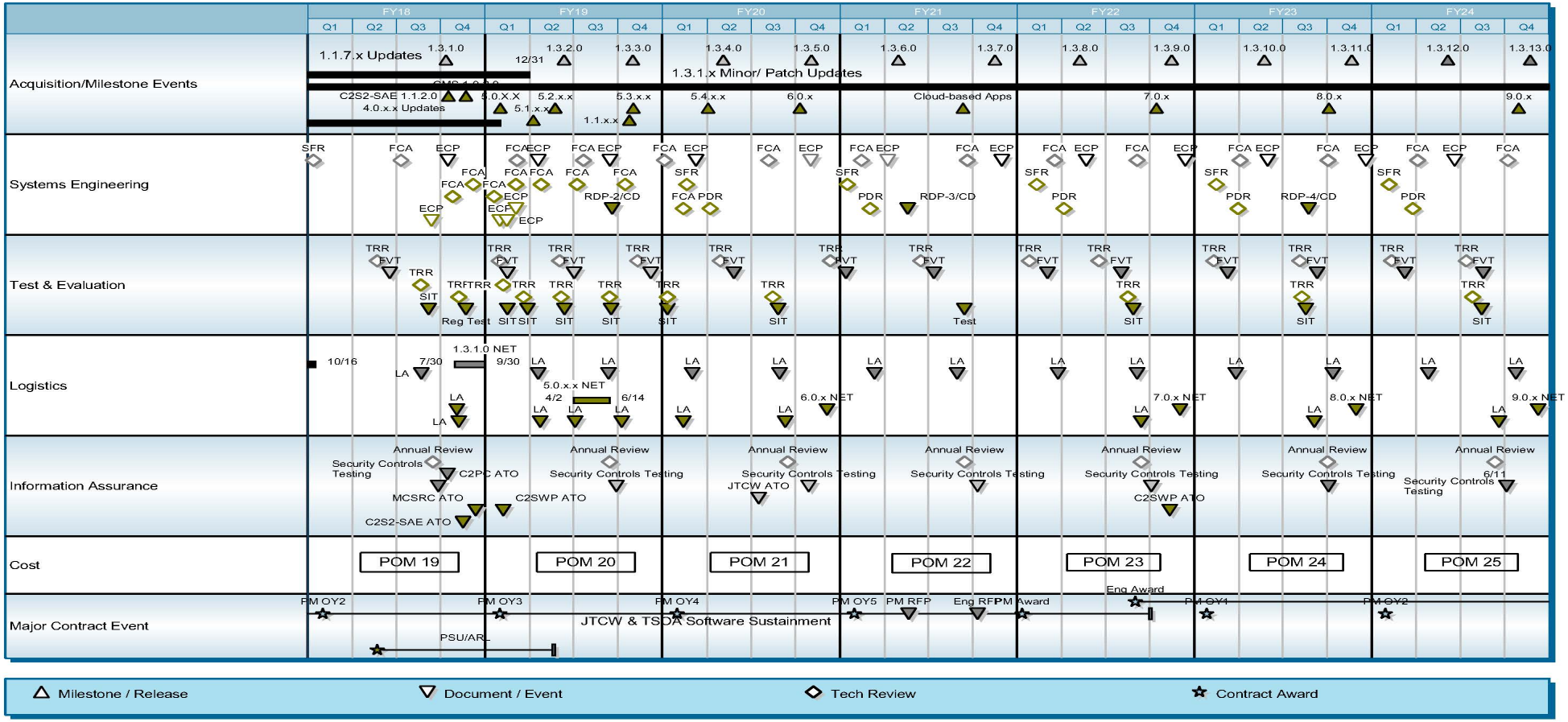


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2270 / *Exp Indirect Fire Gen Supt Wpn Sys*

GCCS-TCO Schedule

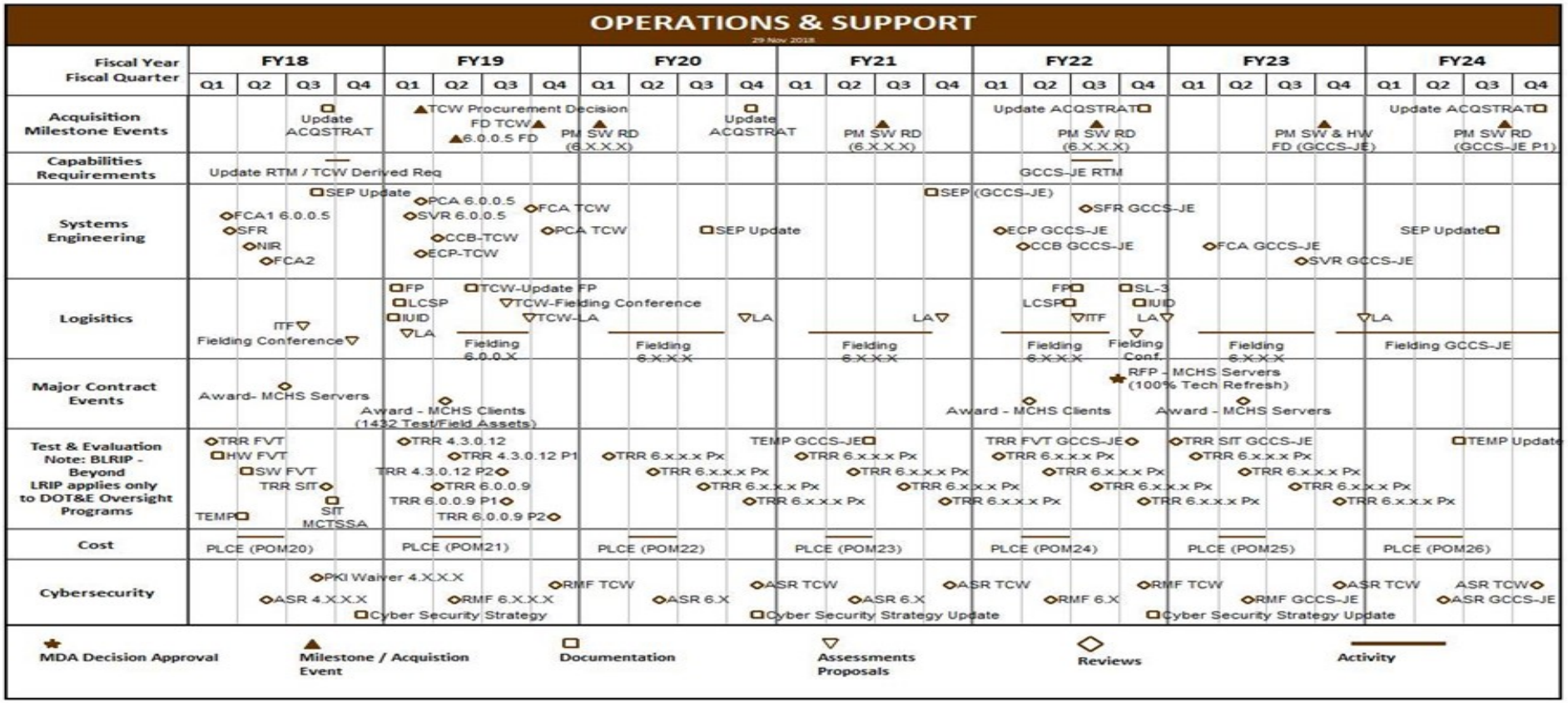


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2270 / *Exp Indirect Fire Gen Supt Wpn Sys*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2270				
MAGTF C2 Security Controls Testing FY19	3	2019	3	2019
MAGTF C2 TRR	3	2019	3	2019
MAGTF C2 ECP FY20	1	2020	1	2020
MAGTF C2 SIT	3	2020	3	2020
MAGTF C2 Security Controls Testing FY20	4	2020	4	2020
JBC-P FoS Platform Fielding - MTVR, LVSR, AAV	2	2019	3	2022
JBC-P FoS Platform Fielding - LAV	4	2019	3	2022
JBC-P FoS Platform Fielding - JLTV	2	2019	4	2024
H2C2 MS C	4	2020	4	2020
IDS-MC MS C/FRP	4	2019	4	2019
IDS-MC Fielding Decision	1	2020	1	2020
IDS-MC INC 3 MDDR	1	2021	1	2021
EFEC Inc 2 MDDR	1	2019	1	2019
EFEC TRR	1	2020	1	2020
EFEC MS C	2	2021	2	2021
GCCS TCO PM DW & HW FD 6.0.0.X	1	2019	1	2019
GCCS TCO Award MCHS Clients	2	2019	2	2019
GCCS TCO TRR SIT	3	2019	3	2019
GCCS TCO PM SW RD (6.X.X.X)	1	2020	1	2020
GCCS TCO SEP Update	3	2020	3	2020

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
2273: *Air Ops Cmd & Control (C2) Sys*	437.381	11.130	8.467	5.397	-	5.397	6.685	7.660	5.913	6.000	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Beginning in FY19, Combat Operations Center (COC) has be realigned from Project C2273 to C2275, Radio Systems, to support US Marine Corps (USMC) Program Management Office (PMO) reorganization to improve support of USMC Operating Forces (OPFOR).

A. Mission Description and Budget Item Justification

Combat Operations Center (COC) - The 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 transitions from Project C2273 to Project C2275 in FY19.

Composite Tracking Network (CTN) - Provides a ground based sensor netting solution that significantly improves situational awareness by correlating sensor measurement data (target position, speed, heading, Identification Friend and Foe (IFF), etc.) from local and remote radars in the Cooperative Engagement Capability (CEC) network. This data is then provided to the warfighter in the form of composite, real-time, air surveillance tracks to the Marine Air Command and Control node and is integral in providing an accurate representation of the airspace to reduce ground to air and air to air fratricide, facilitate more effective integration of air and surface fires, extend the air defensive capability of the Naval force in the littorals and enable integrated fire control (IFC) for the Marine Corps.

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), 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 warfighter with 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, and F/A-18. Data is displayed to Forward Observers (FO), Joint Fires Observers (JFO), Joint Terminal Attack Coordinators (JTAC), and Forward Air Controller (FAC).

Theater Battle Management Core System (TBMCS) - Joint mandated Air War planning tool for the generation, dissemination and execution of the Air Tasking Order (ATO). TBMCS is an Air Force led program, which provides the automated tools necessary to manage tactical air operations, execute area air defense and airspace

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

management in the tactical area of operation, and coordinate operations with components of other military services. TBMCS is located at the Tactical Air Command Center (TACC), with remotes located throughout the area of operation. It is scalable, allowing for joint, coalition and service specific operations. It is an evolutionary acquisition program. USMC has initiated funding in support of Air Force led Command and Control Air Operation System - Command and Control Information Services (C2AOS-C2IS) requirements. USMC is funding participation in the Air Force's test events to ensure USMC requirements are being implemented as Command and Control Air Operation System - Command and Control Information Services (C2AOS-C2IS) will be the replacement for Air Force TBMCS. C2AOS-C2IS - is an ACAT III, post Milestone B, Air Force led program. C2AOS-C2IS will bring increased capability to the Operating Forces with a modern services based infrastructure and modern applications. C2AOS-C2IS provides additional tools to conduct: Situational Awareness and Assessment; Airspace De-confliction; Execution Management and Re-planning; Close Air Support; Targeting/Weaponeering; and Time Critical Targeting. Software development and sustainment keeps Marine Aviation relevant and operational in a joint theater. USMC risk reduction efforts include conducting Critical Analysis/Map Abstraction Layer implementation and assessment and Risk Reduction Testing.

The decrease in funding of $3.07M from FY19 to FY20 is primarily due to a decrease of $2.212M in TBMCS because of a reduction in software development support from Lockheed Martin.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: COC: Continued Capability Solution	1.223	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: -In FY19 COC funding is realigned to project 2275.					
FY 2020 Base Plans: N/A					
FY 2020 OCO Plans: N/A					
Title: COC: Management Services	1.187	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: -In FY19 COC funding is realigned to project 2275.					
FY 2020 Base Plans: N/A					
FY 2020 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A					
Title: Composite Tracking Network (CTN): Support and Management Services	0.897	0.224	0.214	0.000	0.214
Articles:	-	-	-	-	-
FY 2019 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 G/ATOR DT-1E, G/ATOR IOT&E, CEC DA T&E, CAB-E DT-2, and ***FY 2020 Base 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 G/ATOR Mode V Integration and CAB-E Field User Evaluation (FUE). ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of 0.01 from FY 2019 to FY 2020 is due to ramp down of support for G/ATOR Mode V Integration.					
Title: Composite Tracking Network (CTN): Engineering Development	0.988	1.215	0.742	0.000	0.742
Articles:	-	-	-	-	-
FY 2019 Plans: - Continue software certification to maintain interoperability with Cooperative Engagement Capability (CEC) Network to include associated engineering support. - Provide engineering support for CTN Software Development and Integration, CTN System Verification Testing, and Joint testing and certification efforts required to support the G/ATOR Mode V and CTN interface. ***FY 2020 Base Plans:*** - Continue software certification to maintain interoperability with Cooperative Engagement Capability (CEC) Network to include associated engineering support. - Continue engineering support for CTN Software Development and Integration and System Verification Testing, and certification efforts required to support the G/ATOR Mode V and CTN interface.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Continue to support CEC Independent Verification and Validation support and Formal Qualification Test (FQT) ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $0.473M from FY 2019 to FY 2020 is due to transition from development of the CAB-E antenna to production.					
Title: Composite Tracking Network (CTN): Developmental Testing and Cyber Security	1.883	0.733	0.719	0.000	0.719
Articles:	-	-	-	-	-
FY 2019 Plans: - Continue integration and interoperability developmental testing with CAC2S, G/ATOR, and the TPS-59 Mode V. - Continue Information Assurance (IA) developmental activities. - Continue CTN Independent Verification and Validation (IV&V) testing to include associated engineering support. - Initiate G/ATOR Mode V Integration and Testing beginning 2Q FY 2019. ***FY 2020 Base Plans:*** - Initiate support for the CAB Family of Antennas (FoA) FQT and IV&V. - Conduct CAB-E Field User Evaluation (FUE) test events. - Continue support for G/ATOR Mode V Integration and Testing beginning 2Q FY 2019. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** decrease of $0.014M from FY 2019 to FY 2020 is due to reduction of CTN support for G/ATOR Mode V Integration and Testing.					
Title: RVVT: Preparation	1.112	1.125	0.876	0.000	0.876
Articles:	-	-	-	-	-
FY 2019 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Initiate integration with type 1 encrypted sensor platforms to ensure interoperability with newly fielded airframes. - Complete Video Scout MC2 Integration with Windows 10 to comply with Cyber security requirements and maintain IA certifications. ***FY 2020 Base Plans:*** - Continue integration with type 1 encrypted sensor platforms to ensure interoperability with newly fielded airframes. - Initiate developmental and operational testing of software supporting newly fielded airframes. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $0.249M from FY 2019 to FY 2020 is due to completion of the VS MC2 WINDOWS 10 integration effort.					
Title: C2AOS-C2IS Product Development ***Articles:*** ***FY 2019 Plans:*** Decrease of $0.445M from FY 2018 to FY 2019 due to the completion of tactical map software development with C2AOS-C2IS in FY 2018. ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A	0.445 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: C2AOS-C2IS Support ***Articles:*** ***FY 2019 Plans:*** - Continue critical analysis efforts with C2AOS-C2IS applications in support of Air Force led multiservice operational test and evaluation and USMC led Operational Test (OTs) events. ***FY 2020 Base Plans:***	0.240 -	0.314 -	0.323 -	0.000 -	0.323 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Continue critical analysis efforts with C2AOS-C2IS applications in support of Air Force led multiservice operational test and evaluation, USMC led developmental test (DT), and Field User Evaluation (FUE). ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $0.009 from FY 2019 to FY 2020 is due to increased travel to support USAF-led software builds.					
Title: C2AOS-C2IS Test and Evaluation	1.355	1.529	1.548	0.000	1.548
Articles:	-	-	-	-	-
FY 2019 Plans: - Participate in Air Force led Multiservice Operational Test and Evaluation (MOT&E) test event to ensure USMC requirements are addressed. - Continue information assurance testing on developmental software to determine the cyber security posture and conduct risk reduction testing to identify potential vulnerabilities. - Continue USMC support of Air Force C2AOS-C2IS Joint Partner testing. ***FY 2020 Base Plans:*** - Continue to support Air Force led MOT&E test event. - Continue information assurance testing on developmental software to determine the cyber security posture and conduct risk reduction testing to identify potential vulnerabilities. - Continue USMC support of Air Force C2AOS-C2IS Joint Partner testing. - Initiate USMC C2AOS/C2IS Developmental Testing (DT) and Field User Evaluation (FUE) ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $0.019 from FY 2019 to FY 2020 is due to USMC C2AOS/C2IS DT and FUE.					
Title: C2AOS-C2IS Management Services	0.335	0.396	0.256	0.000	0.256
Articles:	-	-	-	-	-
FY 2019 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Continue management support efforts to participate in the development of C2AOS-C2IS. This includes Air Force led Multiservice Operational Test and Evaluation (MOT&E) test events to ensure USMC requirements are addressed, and support USMC led operational tests (OTs). ***FY 2020 Base Plans:*** - Continue management support efforts to participate in the development of C2AOS-C2IS which includes an Air Force led test event and development of software build events, in addition to USMC led Developmental Test (DT) and Field User Evaluation (FUE). ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $0.14M from FY 2019 to FY 2020 is due to reduction of required program support for USAF led test events.					
Title: TBMCS-Engineering Support & Software Development Support	1.465	2.931	0.719	0.000	0.719
Articles:	-	-	-	-	-
FY 2019 Plans: -Continue test and evaluation support for TBMCS upgrades for Joint Interoperability. -Continue development test and evaluation support of USMC developed MR6V and MR7V software releases which support the software baseline for Cyber Security upgrades as well as conduct annual Cyber Security Accreditation. ***FY 2020 Base Plans:*** - Continue test and Evaluation support for TBMCS upgrades for Joint Interoperability. - Continue development test and Evaluation support of USMC developed MR7V and MR8V software releases which support the software baseline for Cyber Security upgrades as well as conduct annual Cyber Security Accreditation. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Decrease of $2.212M from FY 2019 to FY 2020 is due to a reduction of TBMCS SW development support from Lockheed Martin.					
Accomplishments/Planned Programs Subtotals	11.130	8.467	5.397	0.000	5.397

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• PMC/4640CT: *CTN*	1.074	5.455	10.070	-	10.070	14.301	0.000	0.000	0.000	0.000	84.236
• PMC/4640CU: *MACCS*	2.662	0.050	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	96.599
• PMC/4640DX: *TBMCS*	1.902	1.477	1.464	-	1.464	1.293	1.315	1.353	1.400	Continuing	Continuing
• PMC/464023: *RVVT*	8.469	7.287	5.874	-	5.874	0.020	6.198	0.001	0.129	Continuing	Continuing
• PMC/463100: *COC*	16.185	5.768	8.440	-	8.440	12.123	12.365	16.005	16.318	Continuing	Continuing

Remarks

D. Acquisition Strategy

TBMCS - is an ACAT III, Air Force led program with joint interest/oversight. USMC will continue following the Air Force lead when fielding only the joint modules of TBMCS. As USMC unique requirements are identified, USMC will deviate accordingly to sufficiently sustain its systems. For instance TBMCS 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 Air Force is in the process of transitioning TBMCS to C2AOS-C2IS. C2AOS-C2IS is an ACAT III, Air Force led joint interest program and identified as a viable replacement of TBMCS. C2AOS-C2IS is currently in development by the Air Force with an anticipated Full Deployment Decision (FDD) 4th quarter FY 2019. The USMC C2AOS-C2IS strategy is to support and participate in the Air Force led FY 2019 joint test events, implementation of a tactical map interface, and conduct risk reduction testing in order to ensure the USMC remains aligned with the Air Force mandated testing and fielding schedules.

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. The next major efforts are the development and procurement of the Common Array Block-Expeditionary (CAB-E) Antenna to replace the aging Composite Solid State Antenna (CSSA). CTN is to leverage the Naval Sea Systems Command (NAVSEA) led effort to procure CAB antennas. CTN is to procure fourteen (14) CAB-E variants FY 2019 - FY 2021. CTN will develop Mode V interfaces with the Ground/Air Task Oriented Radar (G/ATOR) and the Common Aviation Command and Control System (CAC2S). The mode V 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

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

Full Motion Video (FMV) to support Joint Fires Observers (JFOs) and Joint Terminal Attack Controllers (JTACs) began in FY 2017 and is an ongoing requirement to maintain interoperability with new and existing sensor systems.

COC - The COC AN/TSQ-239 (V)1-4 is the foundation of USMC 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. In FY18, the program continued to maintain industry standard and interoperability with disparate C2 systems across the joint forces.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	257.983	0.000		0.000		0.000		-		0.000	0.000	257.983	-
CTN Engineering Devlopment	C/CPFF	NAVSEA PEO IWS : Washington, DC	22.080	0.988	Feb 2018	1.215	Feb 2019	0.742	Feb 2020	-		0.742	Continuing	Continuing	Continuing
COC	WR	NSWC : Dahlgren,VA	5.991	0.030	Feb 2018	0.000		0.000		-		0.000	0.000	6.021	-
COC	WR	SSC-LANT : Charleston, SC	1.658	0.198	Feb 2018	0.000		0.000		-		0.000	0.000	1.856	-
COC	C/CPIF	SSC-Lant2 : Charleston, SC	0.283	0.995	Jul 2018	0.000		0.000		-		0.000	0.000	1.278	-
C2AOS-C2IS Tactical Map Software Development	SS/FFP	Raytheon Solypsis : Fulton, MD	0.000	0.445	Dec 2017	0.000		0.000		-		0.000	0.000	0.445	-
RVVT	MIPR	AMRDEC : Huntsville, AL	1.165	1.112	Mar 2018	1.125	Mar 2019	0.876	Nov 2019	-		0.876	0.000	4.278	-
		Subtotal	289.160	3.768		2.340		1.618		-		1.618	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	47.558	0.000		0.000		0.000		-		0.000	0.000	47.558	-
CTN Engineering Support	WR	NSWC : Dahlgren, VA	6.270	0.850	Jan 2018	0.208	Jan 2019	0.200	Jan 2020	-		0.200	Continuing	Continuing	Continuing
CTN Engineering Support	WR	NSWC : PHD, CA	0.609	0.033	Feb 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CTN Engineering Support	Various	Travel-TAD : Not Specified	1.124	0.014	Sep 2018	0.016	Sep 2019	0.014	Sep 2020	-		0.014	Continuing	Continuing	Continuing
C2AOS-C2IS Engineering Support	WR	NSWC Dahlgren : Dahlgren, VA	0.000	0.240	Dec 2017	0.314	Dec 2018	0.323	Dec 2019	-		0.323	0.000	0.877	-
		Subtotal	55.561	1.137		0.538		0.537		-		0.537	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
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*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	40.227	0.000		0.000		0.000		-		0.000	0.000	40.227	-
TBMCS Software Development	C/FFP	Lockheed Martin : Colorado Springs, CO	13.377	1.465	Mar 2018	2.931	Mar 2019	0.223	Mar 2020	-		0.223	Continuing	Continuing	Continuing
CTN Developmental Testing	WR	NSWC Corona : Corona, CA	2.185	0.425	Feb 2018	0.312	Feb 2019	0.250	Feb 2020	-		0.250	0.000	3.172	-
CTN Engineering/Cyber Security Development	C/CPFF	NAVSEA PEO IWS : Washington DC	1.667	1.458	Jan 2018	0.421	Jan 2019	0.469	Jan 2020	-		0.469	0.000	4.015	-
TBMCS/C2AOS-C2IS Engineering Support	MIPR	NSWC Crane : Crane, IN	0.000	0.000		0.000		0.496	Oct 2019	-		0.496	0.000	0.496	-
C2AOS-C2IS Operational Test Support	WR	MCOTEA : Quantico, VA	0.000	0.620	Dec 2017	0.788	Dec 2018	0.700	Dec 2019	-		0.700	0.000	2.108	-
C2AOS-C2IS Developmental Test Support	C/FFP	MCTSSA : Camp Pendleton, CA	0.000	0.315	Jan 2018	0.327	Jan 2019	0.425	Jan 2020	-		0.425	0.000	1.067	-
C2AOS-C2IS Cyber Security Training	MIPR	NSWC Dahlgren : Dahlgren, VA	0.000	0.420	Dec 2017	0.414	Dec 2018	0.423	Dec 2019	-		0.423	0.000	1.257	-
		Subtotal	57.456	4.703		5.193		2.986		-		2.986	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	28.671	0.000		0.000		0.000		-		0.000	0.000	28.671	-
COC Engineering Support	FFRDC	U.S. Army, MITRE : Stafford, VA	6.533	1.187	May 2018	0.000		0.000		-		0.000	0.000	7.720	-
C2AOS-C2IS Program Support	C/FFP	NSWC Dahlgren : Dahlgren, VA	0.000	0.335	Apr 2018	0.396	Apr 2019	0.256	Apr 2020	-		0.256	0.000	0.987	-
		Subtotal	35.204	1.522		0.396		0.256		-		0.256	0.000	37.378	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	437.381	11.130		8.467		5.397		-		5.397	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

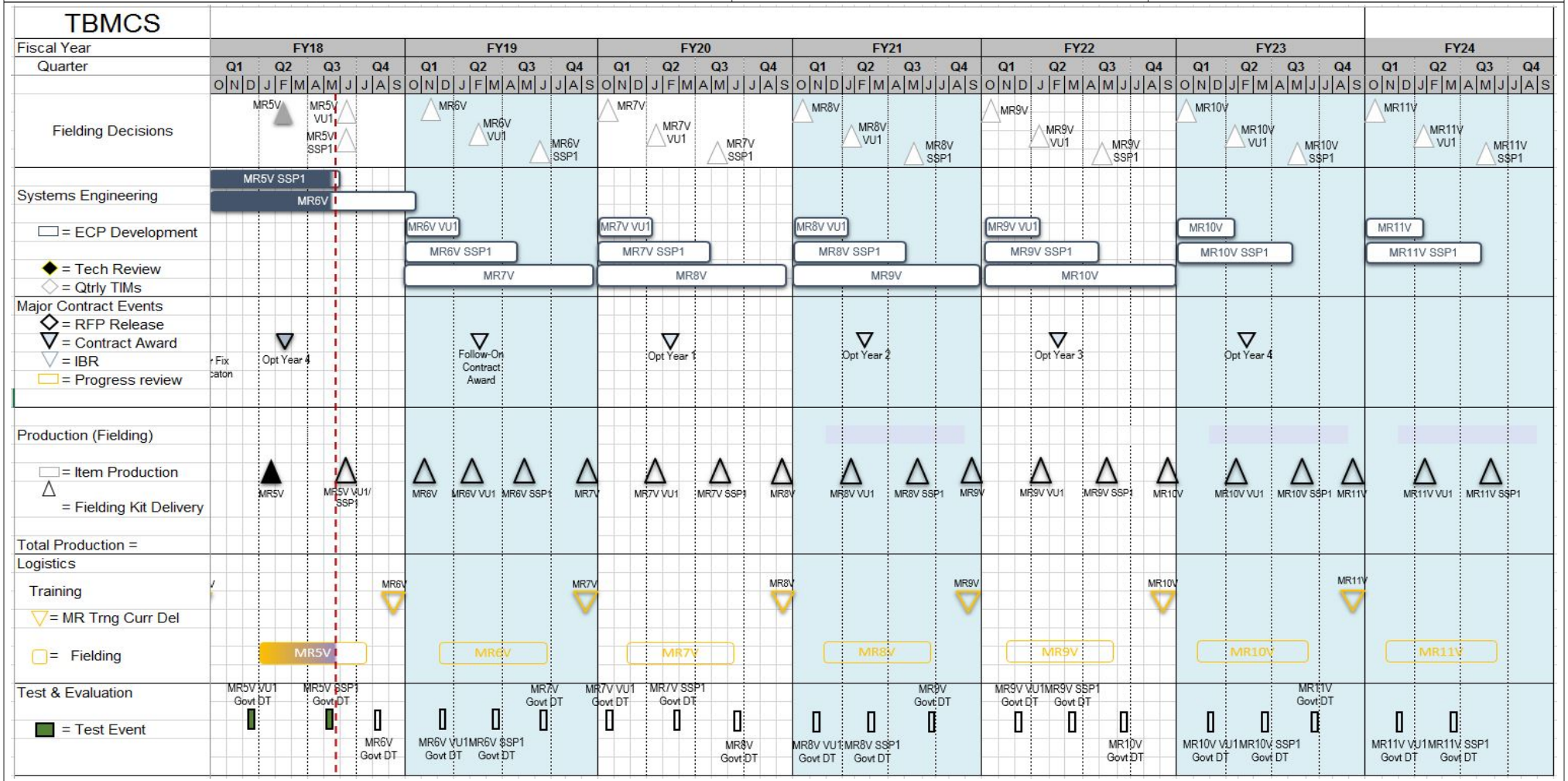


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2273 / *Air Ops Cmd & Control (C2) Sys*

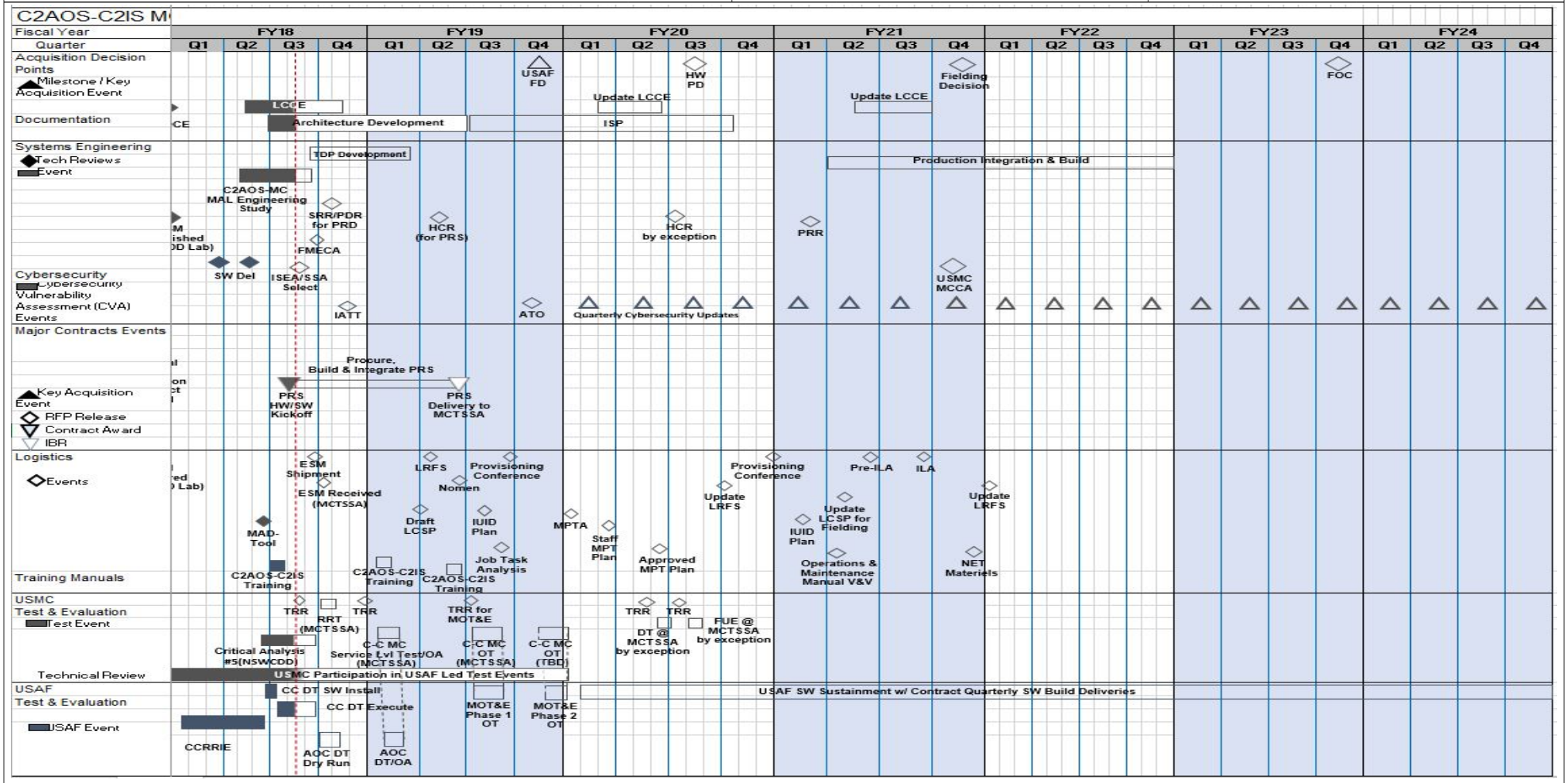


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2273 / *Air Ops Cmd & Control (C2) Sys*

RVVT

Remote Video Viewing Terminal Program Schedule

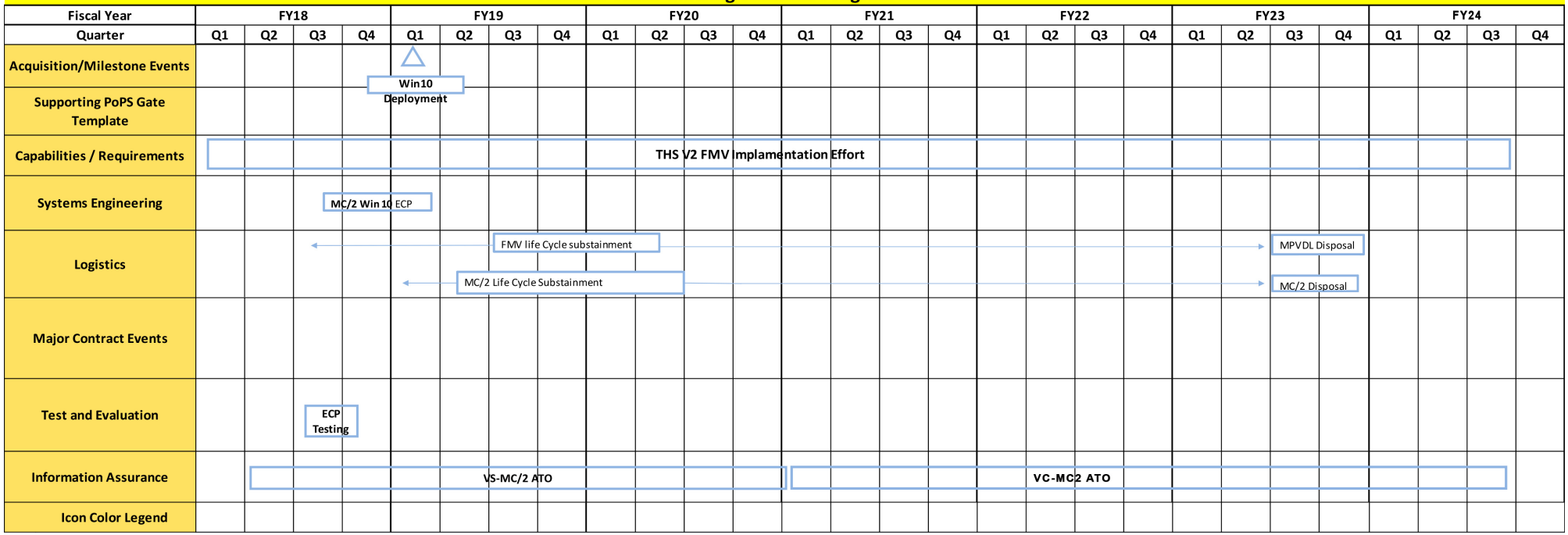


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2273 / *Air Ops Cmd & Control (C2) Sys*

Combat Operations Center (COC) Program Schedule

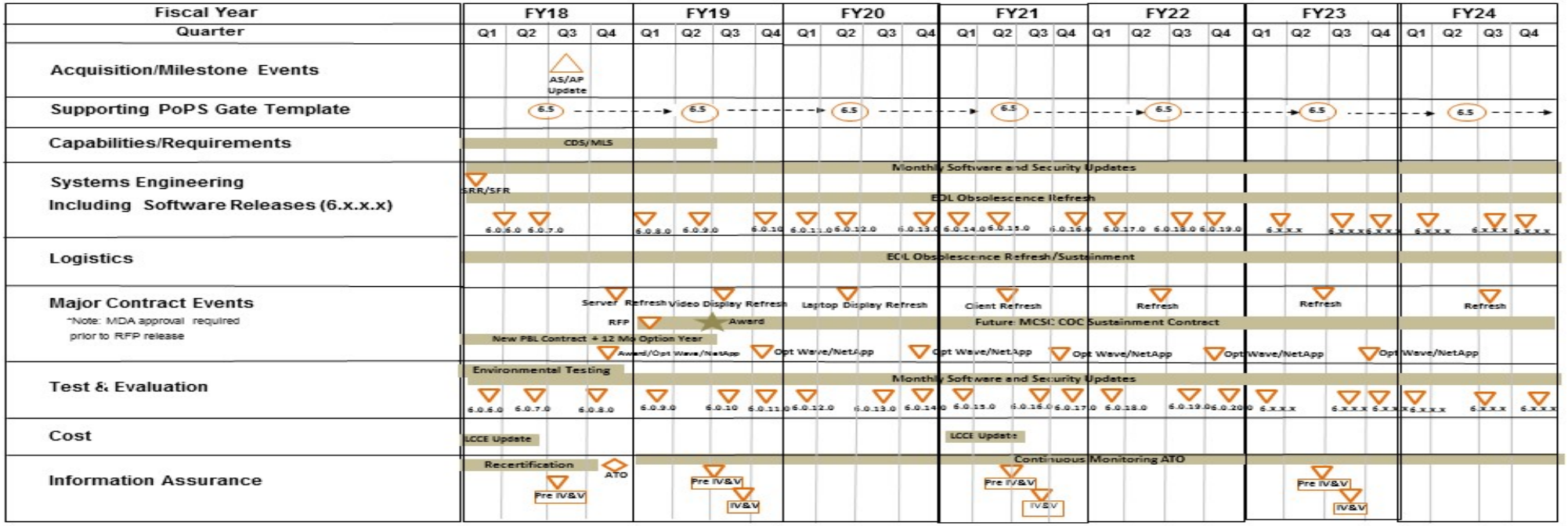


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2273 / *Air Ops Cmd & Control (C2) Sys*

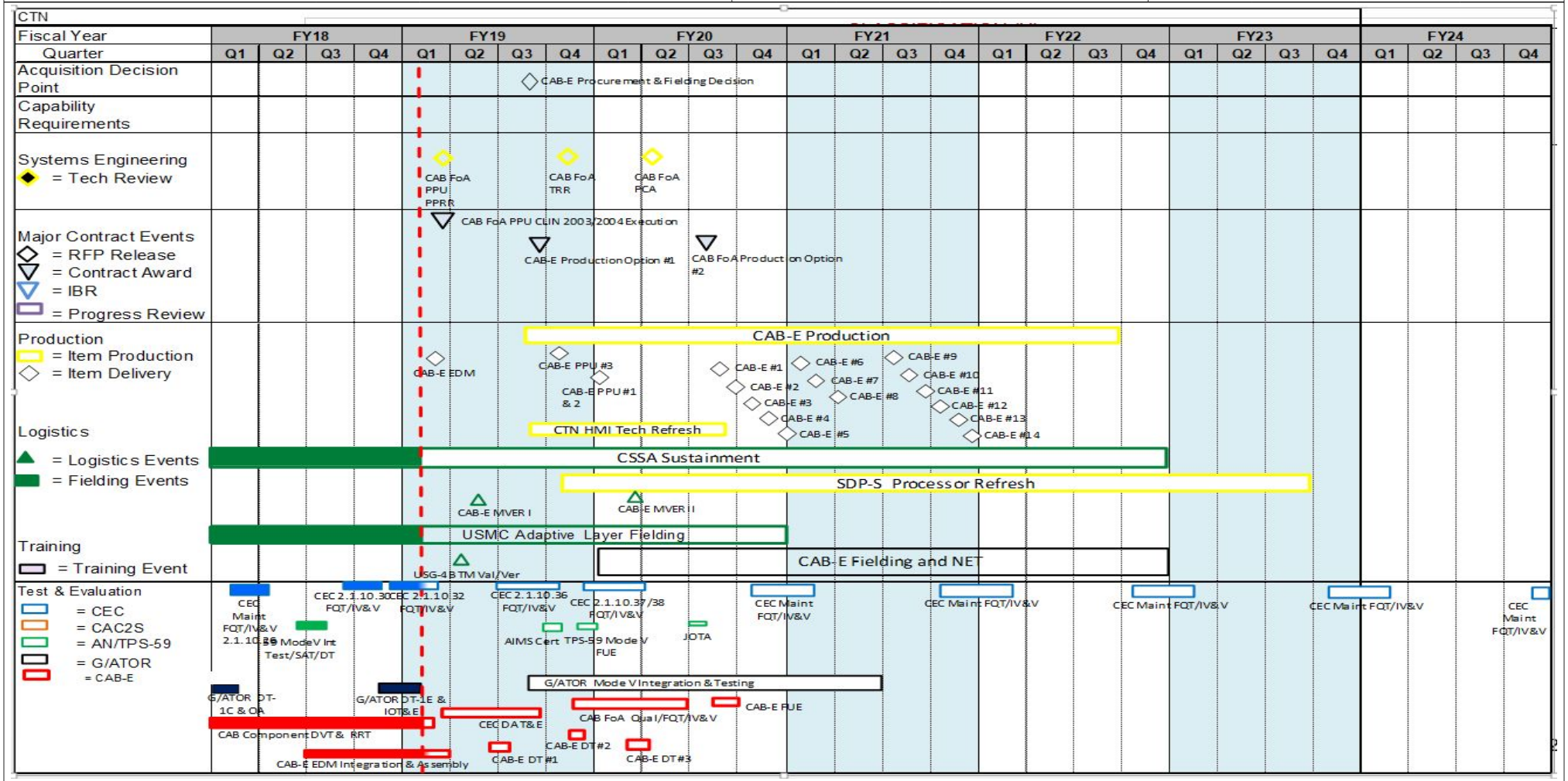


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2273 / *Air Ops Cmd & Control (C2) Sys*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2273				
TBMCS RDT&E IMS: TBMCS MR5V ECP Development	1	2018	3	2018
TBMCS RDT&E IMS: TBMCS MR6V ECP Development	1	2018	3	2019
TBMCS RDT&E IMS: TBMCS Option Year 4 Software Development Award	2	2018	2	2018
TBMCS RDT&E IMS: TBMCS MR5V Government Developmental Test	1	2018	3	2018
TBMCS RDT&E IMS: TBMCS MR7V ECP Development	1	2019	3	2020
TBMCS RDT&E IMS: TBMCS Software Development Contract Award	2	2019	2	2019
TBMCS RDT&E IMS: TBMCS MR6V Government Developmental Test	4	2018	2	2019
TBMCS RDT&E IMS: TBMCS MR8V ECP Development	1	2020	3	2021
TBMCS RDT&E IMS: TBMCS Option Year 1 Software Development Award	2	2020	2	2020
TBMCS RDT&E IMS: TBMCS MR7V Government Developmental Test	3	2019	2	2020
TBMCS RDT&E IMS: TBMCS MR8V Government Developmental Test	3	2020	2	2021
CTN RDT&E IMS: CTN - CAB FoA Technical Readiness Review	4	2019	4	2019
CTN RDT&E IMS: CTN - CAB-E Developmental Test #1	2	2019	3	2019
CTN RDT&E IMS: CTN - CAB-E Developmental Test #2	4	2019	4	2019
CTN RDT&E IMS: CTN - Cooperative Engagement Capability Design Agent Test & Evaluation	1	2019	3	2019
CTN RDT&E IMS: CTN - TPS-59 Mode V Joint Operational Test Approach (JOTA)	3	2020	3	2020
CTN RDT&E IMS: CTN - TPS-59 Mode V Field User Evaluation (FUE)	4	2019	1	2020
CTN RDT&E IMS: CTN - G/ATOR DT-1E and IOT&E	4	2018	1	2019
CTN RDT&E IMS: CTN - CAB-E FoA Qualification/FQT/IV&V	4	2019	2	2020
CTN RDT&E IMS: CTN - G/ATOR Mode V Integration and Testing	3	2019	2	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CTN RDT&E IMS: CTN - CAB-E Developmental Test #3	1	2020	2	2020
RVVT RDT&E IMS: RVVT Full Operational Capability (FOC)	4	2018	4	2018
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS TDP Development	3	2018	1	2019
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS USMC MAL Engineering Study	2	2018	3	2018
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS Software Development	1	2018	2	2018
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS Regression Testing of Tactical Map Interface	2	2018	2	2018
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS Technical Readiness Review	3	2018	3	2018
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS Technical Readiness Review 2	4	2018	4	2018
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS USMC Participation of USAF Development Tests	2	2018	1	2019
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS MOT&E Technical Readiness Review	3	2019	3	2019
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS USMC Service Level Test / Operational Assessment	1	2019	1	2019
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS USMC Operational Tests	3	2019	1	2020
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS USAF MOT&E Phase 1	2	2019	2	2019
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS Cyber Security Vulnerability Assessment	2	2019	3	2019
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS USAF MOT&E Phase 2	4	2019	1	2020
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS Compliance Testing	4	2019	4	2019
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS - USAF Full Deployment Decision (FDD)	4	2019	4	2019
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS Technical Readiness Review 3	2	2020	2	2020
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS USMC Developmental Testing	2	2020	2	2020
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS Technical Readiness Review 4	3	2020	3	2020
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS USMC Field User Evaluation	3	2020	3	2020
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS USMC Cybersecurity Updates	1	2020	4	2024
C2AOS-C2IS RDT&E IMS: C2AOS-C2IS USAF Software Builds	1	2020	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
2274: *Command & Control Warfare Sys*	45.162	8.087	11.992	10.454	-	10.454	11.698	12.360	27.399	22.547	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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. Legacy CREW systems are currently deployed to meet threats in the multiple theaters of operation and fielded to selected Marine Expeditionary Units (MEU)/Marine Expeditionary Forces (MEF) in support of worldwide deployment. To continue to support the various worldwide missions, each CREW unit receives customized programming (loadsets) to counter that area's RCIED threats. The testing, programming development, and product improvement research are funded with the CREW's RDTE,N funding and prioritized to meet the growing demand for all deployed Marine units. CREW received an Urgent Statement of Need (USON) 30 January 2018 directing the development of Multi-Function Electronic Warfare (MFEW) systems. MFEW will combine the capabilities to conduct the existing Counter Radio-Controlled Improvised Explosive Device Electronic Warfare (CREW) mission, with electronic warfare (EW), electronic attack (EA) to Counter-Unmanned Aircraft System (CUAS), Networking, Direction Finding, and future forward looking capabilities as they are developed. Legacy Crew Capabilities and the MFEW development will be components of the Marine Electronic Warfare Ground Family of Systems (MEGFoS).

MEGFoS will provide interconnected electronic warfare systems for use at fixed sites, on tactical vehicles, and dismounted that will operate across a range of frequencies in order to provide the Marine Corps that ability to maneuver efficiently inside the electromagnetic spectrum. MEGFOS provides 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.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: *USMC CREW - Product Development	3.896	8.550	3.151	0.000	3.151
Articles:	-	-	-	-	-
FY 2019 Plans: -Develop software waveform loadsets for USMC CREW Systems including mounted and dismounted system's waveforms used specifically to counter Improvised Explosive Device (IED) and CUAS threat worldwide. Increase loadset development of advanced threats and communications targets. -Develop additional software improvements to overcome select CREW systems capability issues not limited by technology obsolescence.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
-Develop MVPA II vehicle installation kits (VIK) for CREW mounted systems in order to support the integration and installation of the upgrade kits into Marine Corps vehicle platform. -Conduct system level verification testing on the Modi II and MFEW system to counter RCIED threats. -Develop increased capability to the baseline MFEW system in order to network MFEW systems together. -The change of FY19 (2019PB)to FY19 (2020PB)is for increased investment in development of MFEW capability. This will be added to baseline system that will be fielded in FY20. ***FY 2020 Base Plans:*** -Develop increased capability packages for the Modi II and MFEW systems. Specifically, Direction finding capability, an Advanced GUI and Integration in the MAGTF Common Handheld solution. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The decrease of $5.399M from FY19 to FY20 is due to the completion of MVPA II VIK development and some of its testing.					
Title: *USMC CREW - Support	0.155	0.159	0.164	0.000	0.164
Articles:	-	-	-	-	-
FY 2019 Plans: -Conduct systems engineering support at a reduced level for the CREW family of systems and integration support required for the mounted CREW into Marine Expeditionary Units (MEU)/Marine Expeditionary Force (MEF) mission profiles by developing vehicle installation kits for these mounted units. -Provide system support for the Modi II, and Universal Test Sets by analyzing CREW performance impacts resulting from compatibility and environmental risk impacts. ***FY 2020 Base Plans:*** -Provide systems engineering support for MFEW (Modi II, MVPA II) and Universal Test Sets by analyzing performance impacts resulting from compatibility, technology and software updates and environmental risks. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
No significant change from FY 2019 to FY 2020					
Title: *USMC CREW - Test and Evaluation	2.192	1.301	1.019	0.000	1.019
Articles:	-	-	-	-	-
FY 2019 Plans: -Conduct test events in support of the Modi II and MFEW systems regarding its ability to defeat the RCIED and CUAS Threats and provide ES and EA against Communications Targets. -Test the mounted and dismounted MFEW production units that will be fielded for Marine Expeditionary Units (MEU)/Marine Expeditionary Force (MEF) use. -Conduct compatibility testing against USMC and other services devices to ensure Marine Corps MFEW systems maintain required performance capabilities. -Conduct mounted and dismounted MFEW improvements testing to distinguish possible design limitations that can be improved to optimize the Marines use of the system. -Initiate test events for loadsets against advanced and emerging target sets. -The change of FY19 (2019PB)to FY19 (2020PB)is due to late delivery of MFEW systems resulting in final test events being conducted in 1QFY20. Additionally planned events were updated to better defined test events being conducted.					
FY 2020 Base Plans: -Test of the mounted and dismounted MFEW Engineering Changes that will be fielded. -Continue compatibility testing against USMC and other services devices to ensure Marine Corps MFEW systems maintain required performance capabilities. -Test new and developing load-sets ability to exploit or defeat advanced and emerging threat systems.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: The decrease of $0.282M from FY19 to FY20 is due to reduced hardware development testing. Baseline MVPA II systems will be fielded by 2Q FY20.					
Title: *USMC CREW - Management Services	1.844	1.982	2.041	0.000	2.041
Articles:	-	-	-	-	-
FY 2019 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Manage the Techniques development group for RCIED, CUAS, and communictions techniques for the Modi II, MFEW and Universal Test Set (UTS) - Manage System Engineering and Test and Evaluation (T&E) teams associated with MFEW, Modi II and associated development and upgraded capabilities. - Conduct system level configuration management activities for all legacy CREW, MFEW equipment and associated software ***FY 2020 Base Plans:*** -Initiate development of MEGFoS capabilities. Develop a common, open hardware backplane based off the CMOSS program, and an open software architecture. This includes development of hardware that is interoperable across the Mounted, Dismounted and fixed site systems, integration of advanced Transceivers to conduct advanced electronic attack (EA)/electronic support (ES) capabilities, incorporation of algorithms to conduct precision geolocation autonomously using AI, fully networked electronic warfare to provide a high level of situational awareness to commanders and Marines at the company level, increase frequency range to provide radar EA , and incorporation advance electronic warfare (EW) techniques. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** No significant change from FY 2019 to FY 2020					
Title: MEGFoS-Product Development	0.000	0.000	4.079	0.000	4.079
Articles:	-	-	-	-	-
FY 2019 Plans: N/A ***FY 2020 Base Plans:*** -Initiate development of MEGFoS capabilities such as electronic attack (EA)/electronic support (ES) capabilities, precision geolocation, fully networked, radar EA, advance electronic warfare (EW) techniques, and enhanced frequency range. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
The increase of $4.079M from FY19 to FY20 is due to the initiation of the MEGFOS development. MEGFos will develop capabilities such as EA/ES, precision geolocation, fully networked, radar EA, advance EW techniques, and enhanced frequency range.					
Accomplishments/Planned Programs Subtotals	8.087	11.992	10.454	0.000	10.454

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• 6520: *MAGTF EW Ground FoS*	0.000	0.000	0.000	-	0.000	0.000	0.000	35.000	80.500	Continuing	Continuing

Remarks

D. Acquisition Strategy

COUNTER RADIO-CONTROLLED IMPROVISED EXPLOSIVE DEVICE (RCIED) ELECTRONIC WARFARE (USMC CREW): CREW 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 in all current and future operations. The program 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. The CVRJ Program consists of 3100 CREW Vehicle Receiver Jammer CVRJ(V)2. The Modi II program consists of 565 dismounted systems currently being issued to deploying Units for CREW and Counter UAS capability. Modi II and the MVPA II are considered Multi- functional Electronic Warfare (MFEW) systems. FY 19 plan reflects test and evaluation for MFEW development efforts to include software load-set development and capability testing of the Modi II and MVPA II Systems. FY20 plan reflects further test and evaluation for MFEW development efforts to include software load-set development and increased capability testing of the MFEW System, which would provide both CREW and Counter Unmanned Aerial Systems (C-UAS), electronic support, geolocation, direction finding, and networking. MFEW systems are considered a bridge capability based on a USON requirement and will be replaced by the MAGTF Electronic Warfare Ground Family of Systems (MEGFoS) systems in FY25.MEGFoS will provide a significant improvement is capability when compared to MFEW and what is commercially available today.

MEGFoS: will employ an evolutionary acquisition strategy utilizing an incremental and phased approach
for development and fielding. The first increment will focus on developing a common hardware and software standard and the integration of legacy capabilities (MFEW) into that standard. Additionally, it will develop and integrate all EW sensors into a common operating picture allowing all elements of the MAGTF to gain and maintain awareness in the Electro-Magnetic (EM) Spectrum. It will also integrate existing legacy capabilities to include, communications EW, CREW and C-UAS. The subsequent phases will be structured to develop and integrate additional capability into the suite of standards and software. This will include but is not limited to, Cyber, Communications, Signature Management, and advanced signals detection and attack techniques. Increment 1 will procure LRIP quantities of 50 in FY23, for Operational Test at the beginning of FY 24, in support of a full rate production decision in FY24. IOC is projected in 4Q FY25.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

E. Performance Metrics

Milestone Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USMC CREW	WR	NSWC CD : CRANE, IN	6.124	1.506	Jun 2018	2.168	Feb 2019	3.151	Nov 2019	-		3.151	Continuing	Continuing	Continuing
USMC CREW	WR	SSC.A : CHARLESTON, SC	0.000	2.174	Jun 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
USMC CREW	TBD	MCSC : QUANTICO, VA	0.000	0.216	Jun 2019	6.382	Jun 2019	0.000		-		0.000	Continuing	Continuing	Continuing
MEGFoS	TBD	MCSC : QUANTICO, VA	0.000	0.000		0.000		4.079	Dec 2019	-		4.079	Continuing	Continuing	Continuing
Prior Year Cumulative Funding	Various	VARIOUS : VARIOUS	7.549	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	13.673	3.896		8.550		7.230		-		7.230	Continuing	Continuing	N/A

Remarks

USMC CREW NSWC CRANE (Crane, IN) FY18 - FY20: Design, develop and contract engineering changes to the CREW systems and to develop software Threat Load (TL) loadsets for all CREW systems to continue to counter the evolving RCIED Threats.

MEGFoS capabilities developed into MFEW 2.0 in accordance with FY-18 USON.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USMC CREW	WR	SSC-A : CHARLESTON, SC	1.256	0.155	Jun 2018	0.159	Feb 2019	0.164	Feb 2020	-		0.164	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	5.161	0.000		0.000		0.000		-		0.000	0.000	5.161	-
		Subtotal	6.417	0.155		0.159		0.164		-		0.164	Continuing	Continuing	N/A

Remarks

USMC CREW SSC-Atlantic FY18 - FY20: System Engineering and validation and verification.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USMC CREW	MIPR	YPG : YUMA, AZ	8.802	1.892	May 2018	1.301	Apr 2019	0.370	Apr 2020	-		0.370	Continuing	Continuing	Continuing
USMC CREW	MIPR	SOCOM : TAMPA, FL	0.000	0.000		0.000		0.649	Jun 2020	-		0.649	Continuing	Continuing	Continuing
USMC CREW	WR	NSWC CD : CRANE, IN	2.335	0.300	Jan 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	VARIOUS : VARIOUS	4.347	0.000		0.000		0.000		-		0.000	0.000	4.347	-
		Subtotal	15.484	2.192		1.301		1.019		-		1.019	Continuing	Continuing	N/A

Remarks

USMC CREW YPG (Yuma Proving Grounds, AZ) FY18 - FY20: Provide test ranges and results analysis for all CREW systems.
USMC CREW NSWC CD FY18 - FY20: Provide test assets and testing.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USMC CREW	WR	NSWC CD : CRANE, IN	7.986	1.534	Jul 2018	1.578	Mar 2019	1.627	Jan 2020	-		1.627	Continuing	Continuing	Continuing
USMC CREW	C/CPFF	NSWC DD : DAHLGREN VA	0.000	0.310	Jan 2018	0.404	Feb 2019	0.414	Jan 2020	-		0.414	Continuing	Continuing	Continuing
Prior Years Cumulative Funds	Various	VARIOUS : VARIOUS	1.602	0.000		0.000		0.000		-		0.000	0.000	1.602	-
		Subtotal	9.588	1.844		1.982		2.041		-		2.041	Continuing	Continuing	N/A

Remarks

USMC CREW NSWC CRANE FY18 - FY20: Engineering and Acquisition support.
USMC CREW NSWC DD FY18 - FY20: Configuration Management (CM), Liaison Officer (LNO) and engineering support.

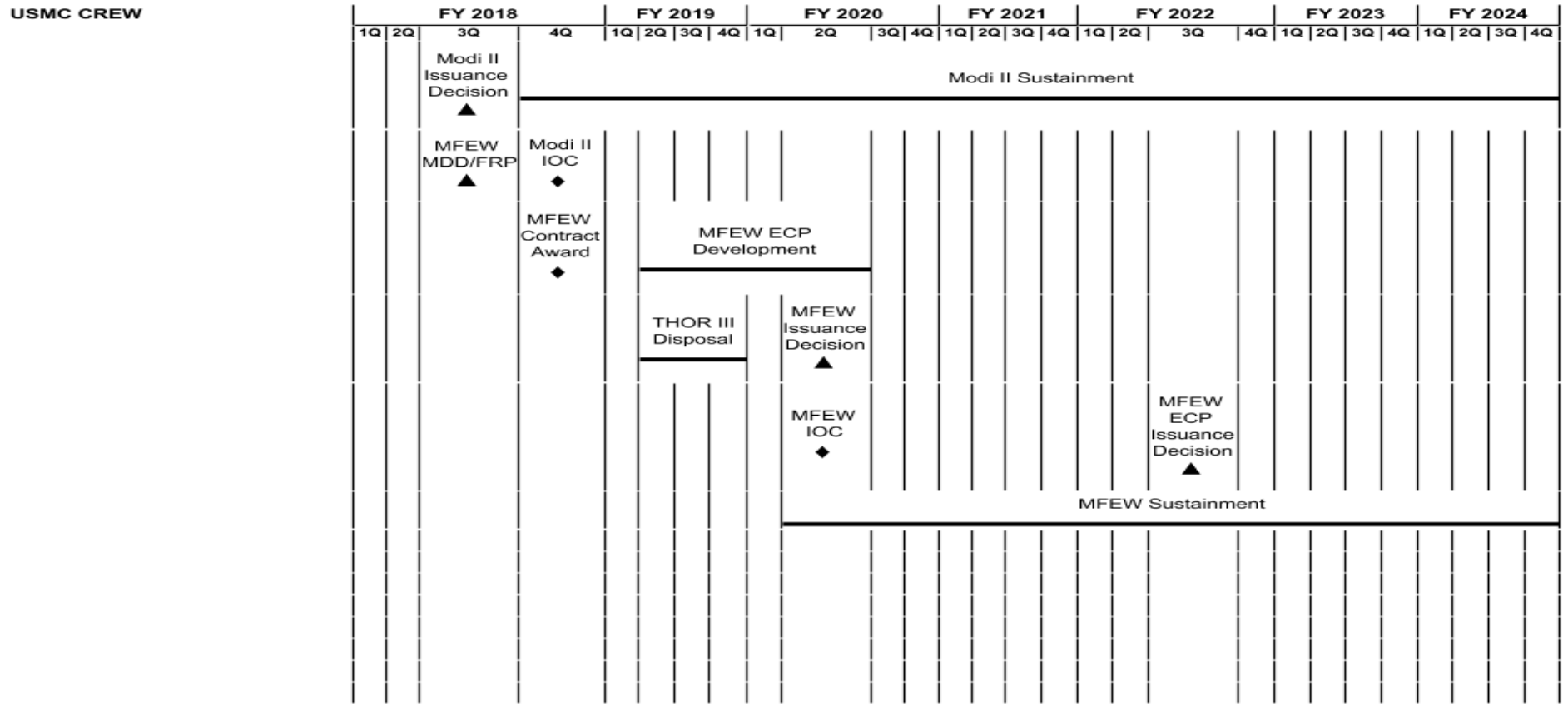
	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	45.162	8.087		11.992		10.454		-		10.454	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract

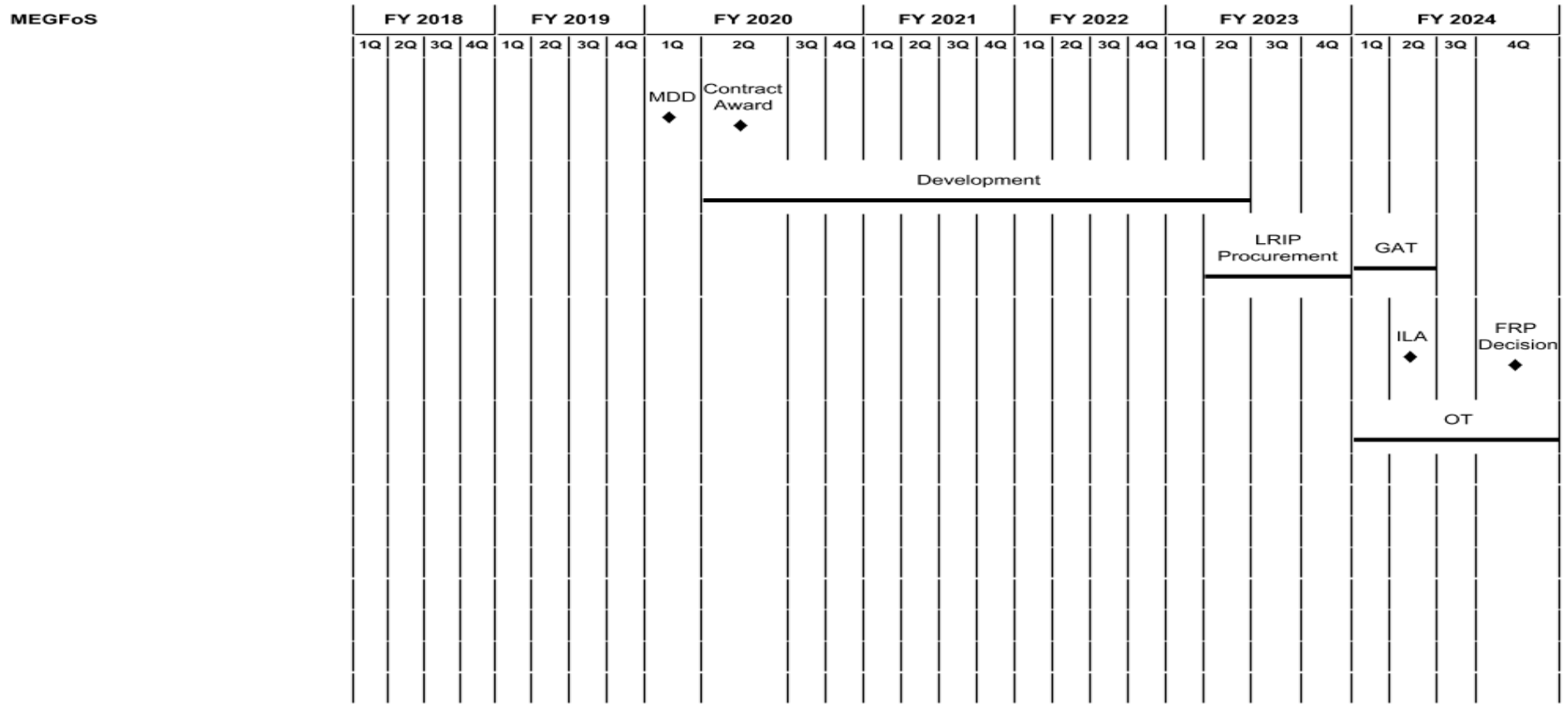
Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*



2020PB - 0206313M - 2274

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*



2020PB - 0206313M - 2274

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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**
USMC CREW				
Modi II Issuance Decision	3	2018	3	2018
Modi II Sustainment	4	2018	4	2024
Modi II IOC	4	2018	4	2018
MFEW MDD/FRP	3	2018	3	2018
MFEW Contract Award	4	2018	4	2018
MFEW ECP Development	2	2019	2	2020
THOR III Disposal	2	2019	4	2019
MFEW Issuance Decision	2	2020	2	2020
MFEW IOC	2	2020	2	2020
MFEW ECP Issuance Decision	3	2022	3	2022
MFEW Sustainment	2	2020	4	2024
MEGFoS				
MEGFoS MDD	1	2020	1	2020
MEGFoS Contract Award	2	2020	2	2020
MEGFoS Development	2	2020	2	2023
MEGFoS LRIP Procurement	2	2023	4	2023
MEGFoS GAT	1	2024	2	2024
MEGFoS ILA	2	2024	2	2024
MEGFoS FRP Decision	4	2024	4	2024
MEGFoS OT	1	2024	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy											Date: March 2019	
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*			
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
2275: *Marine Corps Tactical Radio Systems*	60.097	20.994	23.288	13.348	-	13.348	15.176	14.604	17.551	17.892	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Beginning in FY19, COC funding has been realigned from project 2273 and Air Operations C2 Systems funding to this project. Realignment of efforts to new projects in FY19 and beyond reflects USMC Program Management Office (PMO) reorganization to improve support of USMC OPFOR.

A. Mission Description and Budget Item Justification

Tactical Communications Modernization (TCM): 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, terminals, antennas, current systems requiring updates or obsolescence issues, and Joint Enterprise Network Manager (JENM).

Networking on the Move (NOTM): NOTM provides a robust command and control (C2) capability by integrating tactical data systems with on the move satellite communications (SATCOM) for a beyond line-of-sight ability that allows battlefield commanders to have uninterrupted two-way access to digital data, anywhere on the battlefield. NOTM provides Marine Air-Ground Task Force (MAGTF) commanders and staffs with full Common Operational Picture (COP) access, virtually unlimited situational awareness and a powerful ability to issue digital orders (fires, maneuver, planning) to GCE, ACE, and LCE units at all echelons while on-the-move or at-the-halt. NOTM also provides Marine units the capability to link with and extend Defense Information System Network (DISN) services; SIPRNet, NIPRNet, and Defense Switched Networks (DSN). Integrated full motion video (receipt and retransmission), tactical voice communications plus three options for secure wireless local area network (LAN) connectivity between staff members makes this amphibious capability a crucial asset to all elements of the MAGTF. The USMC currently has three variants depending on the transportation being used; the NOTM Ground Combat Vehicle (GCV), the NOTM Utility Task Vehicle, and the NOTM Airborne (NOTM-A).

Very Small Aperture Terminal (VSAT): The VSAT Family of Systems (FoS) provides wideband beyond-line-of-sight (BLOS), low-cost satellite communications to Marine Air-Ground Task Force (MAGTF) commanders at the Major Subordinate Commands to the Battalion levels. The VSAT FoS provides the RF communications link in support of the transfer of voice, video, and data services.

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 is the only USMC asset that provides a SATCOM AEHF capability. Funding supports test and information efforts associated with component refresh.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

Terrestrial Wideband Transmission Systems (TWTS): TWTS is a capabilities portfolio that provides the Marine Air Ground Task Force (MAGTF) with a continued capability of secure terrestrial digital data transmission. The portfolio includes, the Army/Navy Transportable Radio Communications-170A (AN/TRC-170A) Beyond Line of Sight (BLOS) systems and their replacement Next Generation Troposcatter (NGT). The AN/MRC-142 and the Wireless Point to Point Link (WPPL) Line of Sight (LOS) systems and their replacement called the LOS Replacement (LOS-R), Tactical Elevated Antenna Mast (TEAMS), and Free-Space Optics (FSO) system. The NGT capability will provide a high bandwidth communications data link to support remote locations where satellite communication is not available. The LOS-R capability will provide a digital wideband full duplex link between operating units ashore and units aboard amphibious ships via the Navy's Automated Data Network System (ADNS) to meet ship-to-shore and shore-to-shore communication requirements. FSO is designed to provide additional LOS transmission diversity with an optical line-of-sight transmission path with a Low Probability of Detection/Low Probability of Intercept (LPD/LPI).

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 FY19.

The overall decrease of $9.94M is principally due the transition of NOTM from initial design, development, and prototyping to its refresh cycle.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: TCM: Product Development	1.482	1.118	1.256	0.000	1.256
Articles:	-	-	-	-	-
FY 2019 Plans: - Funding the Marine Corps fair share cost for development of the Joint Enterprise Network Manager (JENM) update release of 3.4 application and development of 3.5.					
FY 2020 Base Plans: - Will continue funding the Marine Corps fair share cost for development of the Joint Enterprise Network Manager (JENM) application required for MUOS.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
No significant change from FY 2019 to FY 2020.					
Title: TCM: Engineering and Program Support	0.266	0.335	0.342	0.000	0.342
Articles:	-	-	-	-	-
FY 2019 Plans: - Engineering and support efforts for radios such as HFR II and MCMP.					
FY 2020 Base Plans: - Engineering and support efforts for radios such as MCHH, and crypto modernization efforts.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: No significant change from FY 2019 to FY 2020.					
Title: TCM: Test and Evaluation Support	2.703	3.082	2.966	0.000	2.966
Articles:	-	-	-	-	-
FY 2019 Plans: - Procurement of test assets and initiate test events for TCM Family of Systems (FoS), including Multi Channel Hand Held (MCHH) (formerly THHR Replacement on schedule). - Test events including software development test, road shock, shake and vibration testing and MIL-STD testing for TCM FoS, such as HFR II and Multi Channel Man Pack (MCMP) (formerly MBR Replacement). - Supports Mobile Objective User System (MUOS) test and evaluations events with JENM 3.5.					
FY 2020 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, such as HFR II, Multi Channel FoS, and system updates or obsolescence.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: Decrease from FY19 to FY20 of $0.362M reflects completion of MCHH test asset procurement.					
Title: TCM: Management Services	0.706	0.386	0.386	0.000	0.386

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Articles:	-	-	-	-	-
FY 2019 Plans: - Will support FFRDC engineering and program support for the TCM Family of Systems (FoS), such as HFR II, MCR FoS, MBR II equipment and legacy equipment reaching obsolescence. ***FY 2020 Base Plans:*** - Will support FFRDC engineering and program support for the TCM Family of Systems (FoS), MCR FoS, MBR II equipment and legacy equipment reaching obsolescence. ***FY 2020 OCO Plans:*** N/A					
Title: NOTM: Product Development	6.433	5.869	0.902	0.000	0.902
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 2019 Plans:*** - Complete design and development efforts focused on reducing SWaP parameters of the NOTM-GCV system. - Complete certification requirements associated with the NOTM GCV tri-band radome upgrade. - Initiate the Link 16 certification process in support of the NOTM GCV equipment upgrade. - Continue development efforts in support of NOTM UTV. ***FY 2020 Base Plans:*** - Complete development of NOTM UTV variant. - Continue Engineering Change Proposals (ECPs) associated with NOTM tech refreshes, equipment upgrades and usability enhancements of fielded systems. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $4.967M from FY19 to FY20 reflects transition from initial design, development, and prototyping for the NOTM UTV and SWaP to a technology refresh cycle.					
Title: NOTM: Test and Evaluation Support	2.779	0.687	0.159	0.000	0.159

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Articles:	-	-	-	-	-
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 2019 Plans:*** - Conduct testing and evaluation efforts in support of the NOTM GCV size, weight and power (SWaP) reduction. - Continue test and evaluation of NOTM-GCV tri-band radome. - Conduct testing and evaluation efforts in support of NOTM UTV. ***FY 2020 Base Plans:*** - Will conduct test and evaluation efforts in support of NOTM technology refreshes and equipment upgrades. - Will complete test and evaluation efforts in support of NOTM UTV. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $0.528M from FY19 to FY20 reflects the completion of the SWaP ECP and NOTM-UTV prototype and transition to a technology refresh cycle.					
Title: NOTM: Management Services	0.000	0.200	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: NOTM Management Services: Funds support management of NOTM variant requirements. ***FY 2019 Plans:*** - Initiates research efforts of servers and network capabilities. ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $0.200M from FY19 to FY20 reflects transition to technology refresh cycle.					
Title: VSAT: Product Development	0.402	0.613	0.468	0.000	0.468

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Articles:	-	-	-	-	-
FY 2019 Plans: - Continue VSAT GUI Design and Development. - Initiate development efforts for the VSAT-M Replacement system. ***FY 2020 Base Plans:*** - Continues to support quarterly VSAT GUI design and development efforts to mitigate cyber-security vulnerabilities. - Procures Next Generation SATCOM test assets in preparation for developmental test in FY21. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $145K reflects completion of VSAT-M Replacement development efforts.					
Title: VSAT: Test and Evaluation	0.152	2.495	1.350	0.000	1.350
Articles:	-	-	-	-	-
FY 2019 Plans: - Procurement of VSAT-M Replacement system test asset. ***FY 2020 Base Plans:*** - Will complete remaining 20% of VSAT-M Refresh testing events. - Initiate test and evaluation efforts, such as test plans, for Next Generation SATCOM. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $1.145M from FY19 to FY20 is due to the completion of procurement of VSAT-M Refresh test assets and 80% of VSAT-M Refresh testing events.					
Title: VSAT: Engineering and Program Support	0.266	0.201	0.201	0.000	0.201
Articles:	-	-	-	-	-
FY 2019 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Continue ECPs in support of modem upgrades and development efforts focusing on Next Generation SATCOM. ***FY 2020 Base Plans:*** - Continue ECPs in support of modem upgrades and development efforts for Next Generation SATCOM. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A					
Title: VSAT: Management Services ***Articles:*** ***FY 2019 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. ***FY 2020 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. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** No significant change from FY19 to FY20.	0.946 -	0.079 -	0.055 -	0.000 -	0.055 -
Title: SMART-T: Engineering and Program Support ***Articles:*** ***FY 2019 Plans:*** - Continue to fund ECPs and Information Assurance support efforts. ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:***	0.000 -	0.083 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The United States Marine Corps (USMC) decided to terminate the SMART-T program in order to better align to the National Defense Strategy.					
Title: SMART-T: Management Services ***Articles:*** ***FY 2019 Plans:*** - Continue to provide engineering analysis through a FFRDC on potential future technical upgrades and research to mitigate end-of-life/end-of-sale, and component obsolescence. ***FY 2020 Base Plans:*** - Continue to provide engineering analysis through a FFRDC on future technical upgrades and research to mitigate end-of-life/end-of-sale, and component obsolescence. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The United States Marine Corps (USMC) decided to terminate the SMART-T program in order to better align to the National Defense Strategy.	0.180 -	0.099 -	0.000 -	0.000 -	0.000 -
Title: TWTS: Product Development ***Articles:*** ***FY 2019 Plans:*** - Complete sustainment ECP development for AN/MRC-142D. ***FY 2020 Base Plans:*** - N/A ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $.078M from FY19 to FY20 reflects completion of sustainment ECP for AN/MRC-142D.	1.199 -	0.078 -	0.000 -	0.000 -	0.000 -
Title: TWTS: Engineering and Program Support	2.064	1.953	0.200	0.000	0.200

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Articles:	-	-	-	-	-
FY 2019 Plans: - Continue to fund program management, engineering and information assurance support for the Next Generation Tropo (NGT) systems and TWTS Family of Systems (FoS). ***FY 2020 Base Plans:*** - Continue to fund Program office management support. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $1.753M from FY19 to FY20 reflects completion of TWTS Engineering and Information assurance support.					
Title: TWTS: Test and Evalution Support	0.891	0.622	0.686	0.000	0.686
Articles:	-	-	-	-	-
FY 2019 Plans: - Continue with test and evaluation events to support Next Generation Tropo (NGT) and Line Of Sight Replacement (LOS R). ***FY 2020 Base Plans:*** - Ramp up of test and evaluation efforts related to Next Generation Tropo (NGT) and Line of Sight Replacement (LOS-R) developmental test. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $.64M from FY19 to FY20 is due to an increase in testing starting in FY20.					
Title: TWTS: Management Services	0.525	0.325	0.105	0.000	0.105
Articles:	-	-	-	-	-
FY 2019 Plans: - Continue engineering and program support for TWTS FoS. ***FY 2020 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $.22M from FY19 to FY20 reflects reduction of TWTS MITRE engineering support to align with transition to production for NGT.					
Title: COC: Product Development ***Articles:*** ***FY 2019 Plans:*** - Continue testing and software integration efforts needed to align with other C2 systems. ***FY 2020 Base Plans:*** - Will continue testing and integration efforts for tactical wireless capability and cyber intrusion to meet readiness and warfighting requirements. - Initiate testing, integration, and network interoperability for network and table top switch replacement. - Initiate an internal communications systems re-design and evaluate a new solution for the internal communication system to address intercom noise hazardous issues. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $0.747M from FY19 to FY20 due to additional testing and integration efforts, tactical wireless, and server refresh.	0.000 -	2.525 -	3.272 -	0.000 -	3.272 -
Title: COC: Management Services ***Articles:*** ***FY 2019 Plans:*** - Continue engineering support for system optimization and system enhancements. ***FY 2020 Base Plans:***	0.000 -	2.538 -	1.000 -	0.000 -	1.000 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Will continue engineering support for system optimization and system enhancements to provide the ability for COC to operate with present and future MAGTF operations. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $1.538M from FY19 to FY20 reflects transition of management services cost to Operation and Maintenance.					
Accomplishments/Planned Programs Subtotals	20.994	23.288	13.348	0.000	13.348

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• PMC/4633-1: *TCM*	19.718	204.285	164.165	-	164.165	284.999	277.097	287.568	293.335	Continuing	Continuing
• PMC/4631-1: *NOTM*	117.014	92.669	79.373	-	79.373	33.034	14.354	14.929	15.227	Continuing	Continuing
• PMC/4633-2: *VSAT*	7.044	7.567	15.957	-	15.957	14.490	14.951	18.931	19.306	Continuing	Continuing
• PMC/4633-3: *SMART-T*	0.549	0.571	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• PMC/4633-4: *TWTS*	0.060	36.643	37.469	-	37.469	56.232	212.979	208.820	213.008	Continuing	Continuing
• PMC/7000: *SMART-T Spares*	0.205	0.207	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• PMC/4631-2: *COC*	16.185	5.768	8.440	-	8.440	12.123	12.365	16.005	16.318	Continuing	Continuing
• RDTE/C2273: *COC*	2.410	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.935

Remarks

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. Due to NSA Type 1 COMSEC capability requirement, High Frequency Radios II (HFR II) is limited on vendor opportunities. The contracting strategy is sole-source to a qualified NSA vendor. The validation of Military and Marine Corps Standards will be tested and will be completed before procurement. The MCR FoS will be an evolutionary program with upgrades to radio software and hardware based capabilities throughout the lifecycle. To maximize better buying power, reduce lifecycle cost, and enhance interoperability, the MCR FoS will engage in a cooperative acquisition with the United States Army (USA) Program Executive Office - Command, Control, and Communications-Tactical (PEO C3T), Program Manager Tactical Radios Handheld, Manpack

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 Small Form Fit Program. MCR FoS will leverage programmatic documentation and contracts under PEO-C3T in order to meet the material solution for the MCMP and MCHH, reduce duplication of effort and meet future sustainment requirements.

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.

Very Small Aperture Terminal (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 VSAT program will conduct a VSAT-Medium refresh to bridge the gap between current obsolescence and Next Generation SATCOM development. The VSAT acquisition strategy leverages Commercial-Off-The-Shelf (COTS) technology to keep the systems relevant and capable. The design of Next Generation SATCOM is intended to be scalable and utilize like subcomponents to minimize sustainment costs and equipment readiness issues. 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 capabilities portfolio that includes Beyond Line of Sight (BLOS) system and Line of Sight (LOS) systems. The AN/TRC-170A BLOS is a vehicle mounted self-enclosed troposcatter terminal fielded in 1992 and will be replaced by the Next Generation Troposcatter (NGT) transit case solution capable of providing 900% capacity increase, decrease size, and frequency diversity over the current system. The AN/MRC-142 Family of Systems (FoS) is the current LOS system that provides two-way, secure voice and data communications up to 35 miles. The AN/MRC-142 FOS will be replaced by the LOS replacement (LOS-R) system providing radio compatibility with the Army and Navy for these high capacity LOS communication systems.

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.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TCM JENM Development	SS/CPFF	ARL : Aberdeen, MD	2.038	1.407	Feb 2018	1.118	Feb 2019	1.121	Feb 2020	-		1.121	0.000	5.684	-
TCM FoS LCCEs	C/IDIQ	MCSC : Quantico, VA	0.035	0.075	Sep 2018	0.000		0.135	Jul 2020	-		0.135	0.000	0.245	-
NOTM Development/ Enhancement	WR	SSC-LANT2: : Charleston, SC	0.000	0.000		1.200	Apr 2019	0.000		-		0.000	0.000	1.200	-
NOTM Development/ Enhancement	MIPR	DLA : Philadelphia, PA	0.000	1.598	Jun 2018	0.800	Mar 2019	0.000		-		0.000	0.000	2.398	-
NOTM Development/ Enhancement	C/FFP	MCTSSA: : Camp Pendleton, CA	0.000	0.000		0.200	Jan 2019	0.200	Jan 2020	-		0.200	0.000	0.400	-
NOTM Development	C/CPFF	SSC-LANT : Charleston, SC	2.354	1.393	May 2018	0.200	Jan 2019	0.200	Feb 2020	-		0.200	0.000	4.147	-
NOTM Development	WR	SSC-Pacific : San Diego, CA	1.559	1.072	Feb 2018	2.519	May 2019	0.502	Dec 2019	-		0.502	Continuing	Continuing	Continuing
NOTM-A	WR	SSC-Atlantic : Charleston, SC	1.497	0.000		0.250	Apr 2019	0.000		-		0.000	0.000	1.747	-
NOTM-UTV	WR	DTIC : Fort Belvoir, VA	0.000	1.579	Apr 2018	0.000		0.000		-		0.000	0.000	1.579	-
NOTM Production Enchancement	MIPR	DTIC : Fort Belvoir, VA	0.000	0.791	Jun 2018	0.700	Mar 2019	0.000		-		0.000	Continuing	Continuing	Continuing
VSAT GUI Development	C/FFP	CECOM : Aberdeen, MD	0.618	0.402	Jul 2018	0.613	Jun 2019	0.468	Jun 2020	-		0.468	0.000	2.101	-
TWTS ARMY NGT SYSTEM	TBD	CECOM : Aberdeen, MD	0.000	0.817	Jan 2019	0.000		0.000		-		0.000	0.000	0.817	-
TWTS ECP Development	WR	SSC-Lant : Charleston, SC	0.000	0.382	Jul 2018	0.078	Feb 2019	0.000		-		0.000	0.000	0.460	-
COC	WR	SSC-Lant : Charleston, SC	0.000	0.000		1.453	May 2019	1.338	May 2020	-		1.338	0.000	2.791	-
COC	WR	NSWC2 : Dahlgren, VA	0.000	0.000		0.600	May 2019	0.000		-		0.000	0.000	0.600	-
COC	C/CPIF	NSWC : Dahlgren, VA	0.000	0.000		0.200	May 2019	0.000		-		0.000	0.000	0.200	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
COC	C/CPIF	SSC-Lant2 : Charleson, SC	0.000	0.000		0.272	May 2019	1.934	May 2020	-		1.934	0.000	2.206	-
Prior Years Cumulative Funding	Various	Various : Various	15.057	0.000		0.000		0.000		-		0.000	0.000	15.057	-
		Subtotal	23.158	9.516		10.203		5.898		-		5.898	Continuing	Continuing	N/A

Remarks

COC realigned from Project C2273 to C2275 starting in FY19.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TCM Engineering Support	Various	MCSC : Quantico, VA	0.059	0.266	May 2018	0.335	Sep 2019	0.342	May 2020	-		0.342	Continuing	Continuing	Continuing
VSAT Engineering Support	WR	SSC-PAC : San Diego, CA	0.491	0.266	Feb 2018	0.201	Feb 2019	0.201	Feb 2020	-		0.201	Continuing	Continuing	Continuing
SMART-T Engineering Support	WR	SSC-LANT : Charleston, SC	0.304	0.000		0.083	Mar 2019	0.000		-		0.000	Continuing	Continuing	Continuing
TWTS Program Management Support	Various	MCSC : Quantico, VA	0.841	0.742	May 2018	0.445	May 2019	0.200	May 2020	-		0.200	Continuing	Continuing	Continuing
TWTS Engineering Support	WR	SSC-LANT : Charleston, SC	0.000	1.057	Apr 2018	1.334	Jan 2019	0.000		-		0.000	0.000	2.391	-
TWTS IA Support	WR	NSWC : Indian Head, MD	0.000	0.250	May 2018	0.174	Feb 2019	0.000		-		0.000	0.000	0.424	-
TWTS NGT CARD/LCCE Cost Analysis	TBD	MCSC : Quantico, VA	0.000	0.015	Aug 2018	0.000		0.000		-		0.000	0.000	0.015	-
Prior Years Cumulative Funding	Various	Various : Various	1.516	0.000		0.000		0.000		-		0.000	0.000	1.516	-
		Subtotal	3.211	2.596		2.572		0.743		-		0.743	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

SMART-T Support: FY2020 - The USMC decided to terminate the Secure Mobile AntiJam Reliable-Tactical program in order to better align with the National Defense Strategy.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TCM FoS Test Activities	TBD	TBD : TBD	0.000	1.722	Aug 2018	1.692	Aug 2019	1.805	Aug 2020	-		1.805	Continuing	Continuing	Continuing
TCM T&E Support	MIPR	DHHS : Bethesda, MD	0.121	0.000		0.290	Mar 2019	0.293	Mar 2020	-		0.293	0.000	0.704	-
TCM FoS Test Assets	C/IDIQ	PRP : San Diego, CA	0.000	0.981	Sep 2018	1.100	Jul 2019	0.868	Feb 2020	-		0.868	0.000	2.949	-
NOTM Vehicle Integration Testing	WR	SSC-LANT : Charleston, SC	1.546	1.009	Jun 2018	0.200	Apr 2019	0.000		-		0.000	Continuing	Continuing	Continuing
NOTM-A Testing	WR	NSWC Crane : Crane, IN	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
NOTM-A Testing	WR	SSC PAC : San Diego, CA	0.000	1.361	May 2018	0.000		0.159	May 2020	-		0.159	0.000	1.520	-
NOTM EOL	C/CPFF	SSC_LANT : Charleston, SC	0.236	0.000		0.200	Apr 2019	0.000		-		0.000	0.000	0.436	-
NOTM Testing	MIPR	SSC-PAC : Hawaai	0.000	0.409	Jun 2018	0.287	May 2019	0.000		-		0.000	0.000	0.696	-
VSAT Testing	MIPR	TBD : TBD	0.094	0.152	Nov 2018	2.495	Jan 2019	1.350	Apr 2020	-		1.350	Continuing	Continuing	Continuing
TWTS T&E Support	C/FFP	Dept. of Human Health and Services : Rockville, MD	0.222	0.891	Apr 2018	0.622	Mar 2019	0.686	Mar 2020	-		0.686	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	Various : Various	19.671	0.000		0.000		0.000		-		0.000	0.000	19.671	-
		Subtotal	21.890	6.525		6.886		5.161		-		5.161	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TCM Engineering Support	FFRDC	US Army, MITRE : Stafford, VA	0.533	0.706	May 2018	0.386	Aug 2019	0.386	Dec 2019	-		0.386	0.000	2.011	-
NOTM Engineering Support	FFRDC	US Army, MITRE : Stafford, VA	0.000	0.000		0.200	Dec 2018	0.000		-		0.000	0.000	0.200	-
VSAT Engineering Support	FFRDC	US Army, MITRE : Stafford, VA	5.069	0.946	Sep 2018	0.079	Feb 2019	0.055	Feb 2020	-		0.055	0.000	6.149	-
SMART-T Engineering Support	FFRDC	US Army, MITRE : Stafford, VA	0.167	0.180	Feb 2018	0.099	Feb 2019	0.000		-		0.000	Continuing	Continuing	Continuing
TWTS Engineering Support	FFRDC	US Army, MITRE : Stafford, Va	0.371	0.525	Sep 2018	0.325	Jan 2019	0.105	Jan 2020	-		0.105	0.000	1.326	-
COC Engineering Support	FFRDC	US Army, MITRE : Stafford, VA	0.000	0.000		2.538	Feb 2019	1.000	Feb 2020	-		1.000	Continuing	Continuing	Continuing
Prior Year Cumulative Funding	FFRDC	US Army, MITRE : Stafford, VA	5.698	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	11.838	2.357		3.627		1.546		-		1.546	Continuing	Continuing	N/A

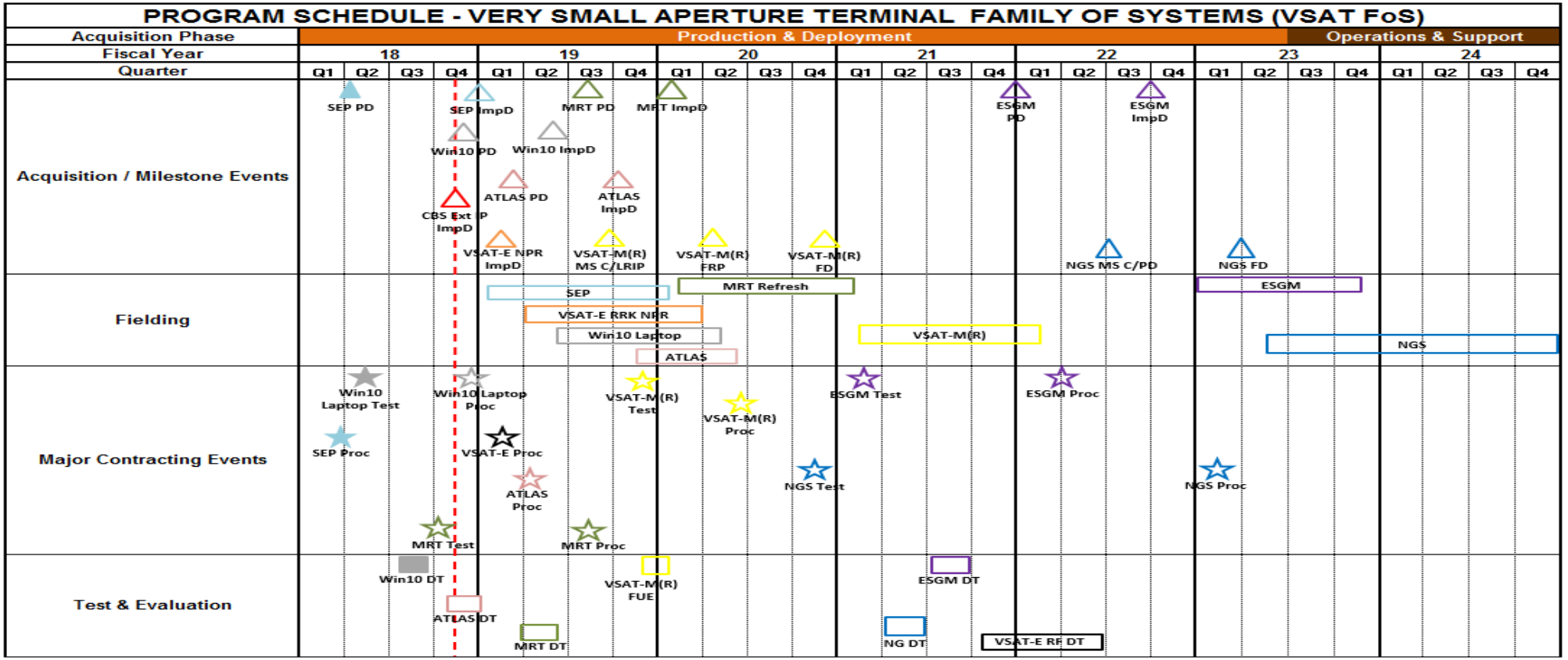
Remarks

COC realigned from Project C2273 to C2275 starting in FY19.
SMART-T Management Services: FY2020 - The USMC decided to terminate the Secure Mobile AntiJam Reliable-Tactical program in order to better align with the National Defense Strategy.

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	60.097	20.994		23.288		13.348		-		13.348	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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)
ESGM: Enterprise Satellite Gateway Modem
FD: Fielding Decision
ImpD: Implementation Decision
MRT: Master Reference Terminal
NGS: Next Generation SATCOM
NP: Network Package
PD: Procurement Decision
SEP: Signal Entry Panel (VSAT Large)

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

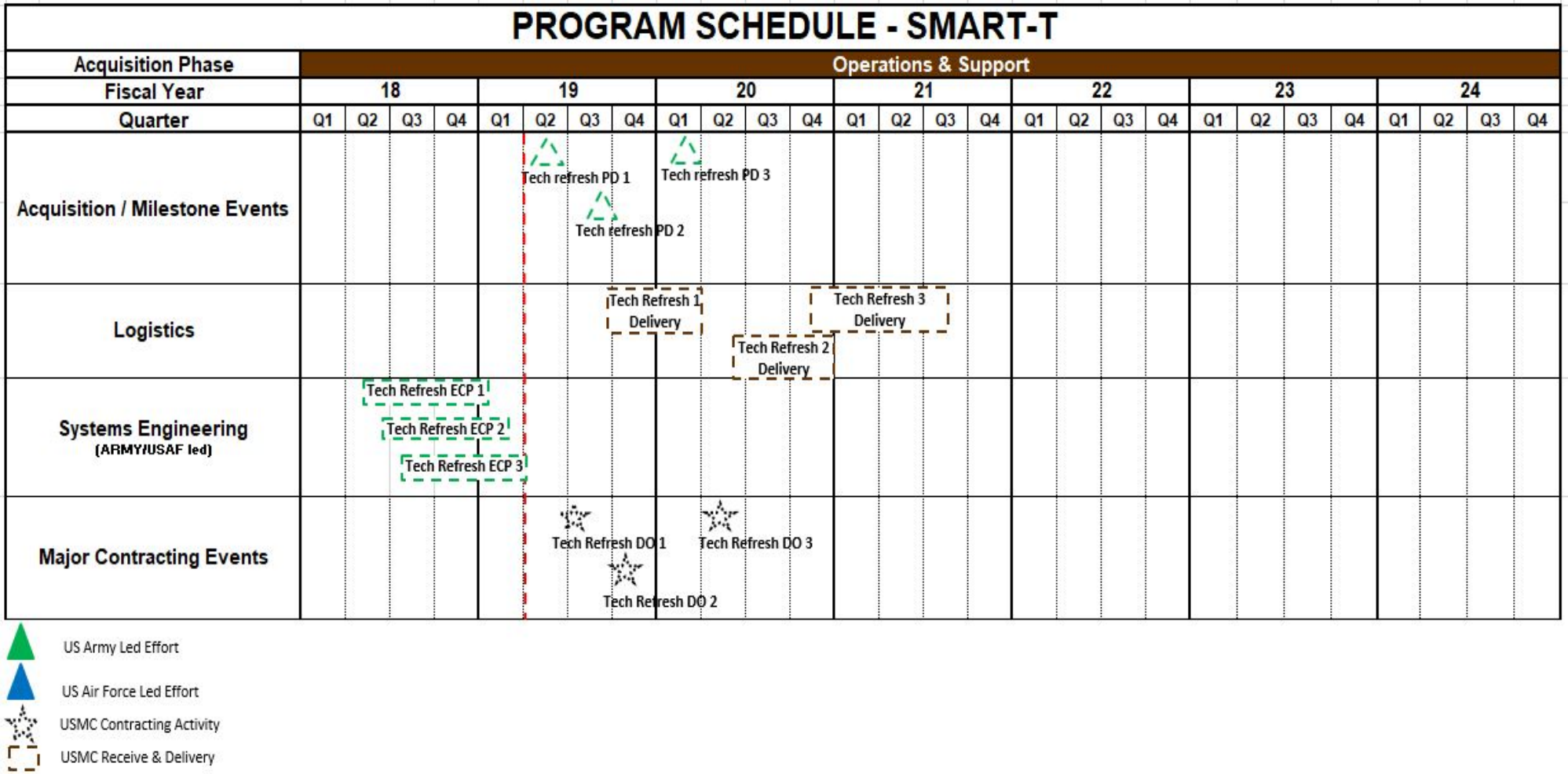
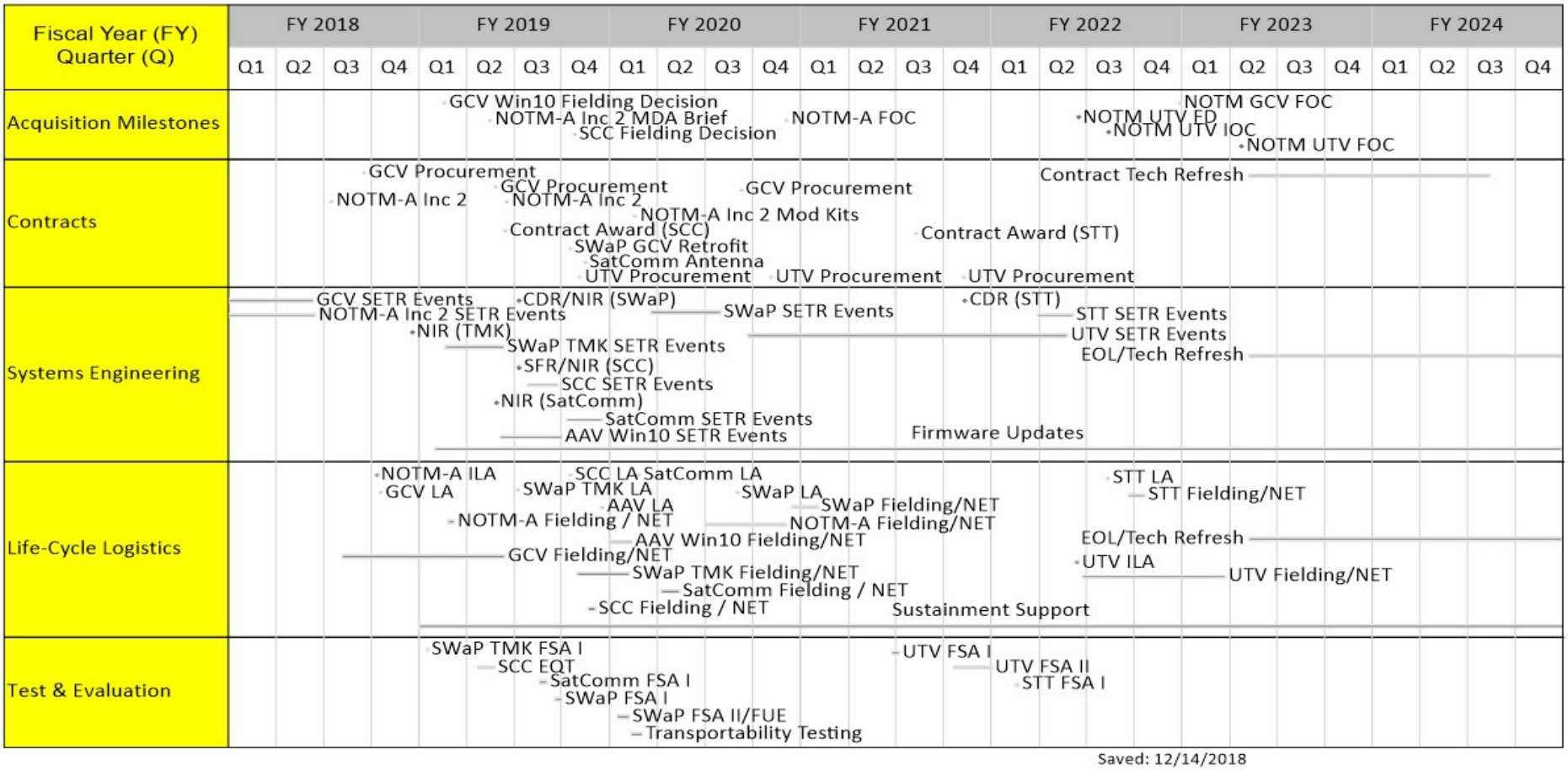


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

NOTM PB19 IMS



Saved: 12/14/2018

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

Combat Operations Center (COC) Program Schedule

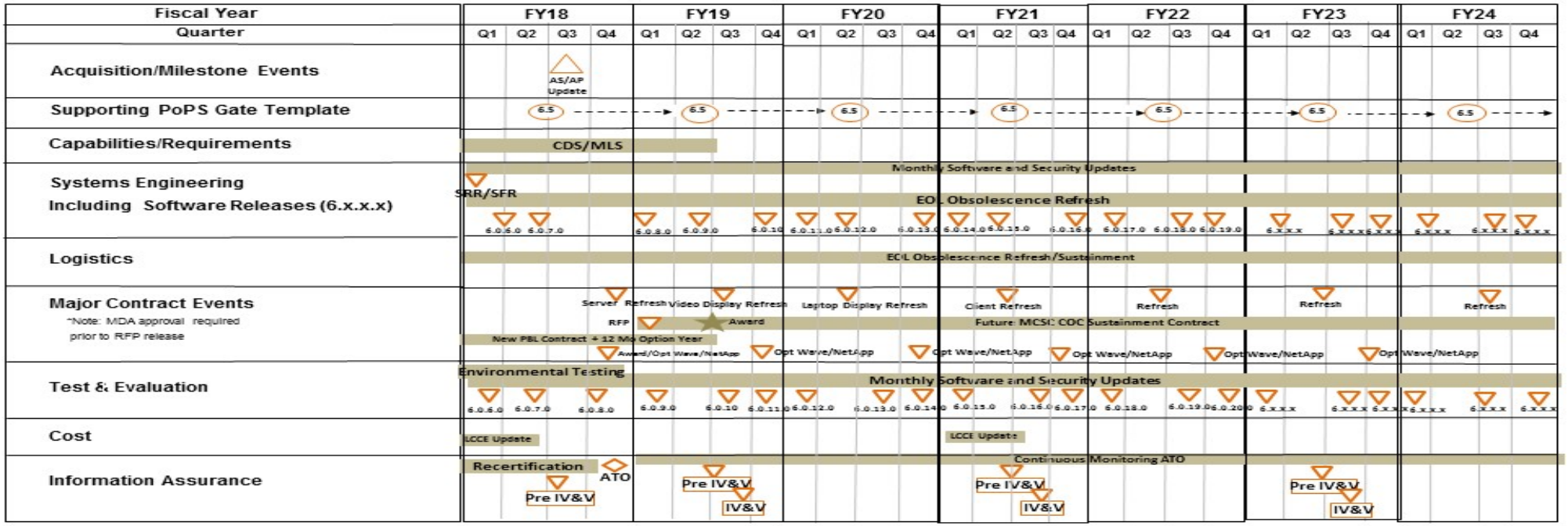


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

TCM - MBR II Schedule

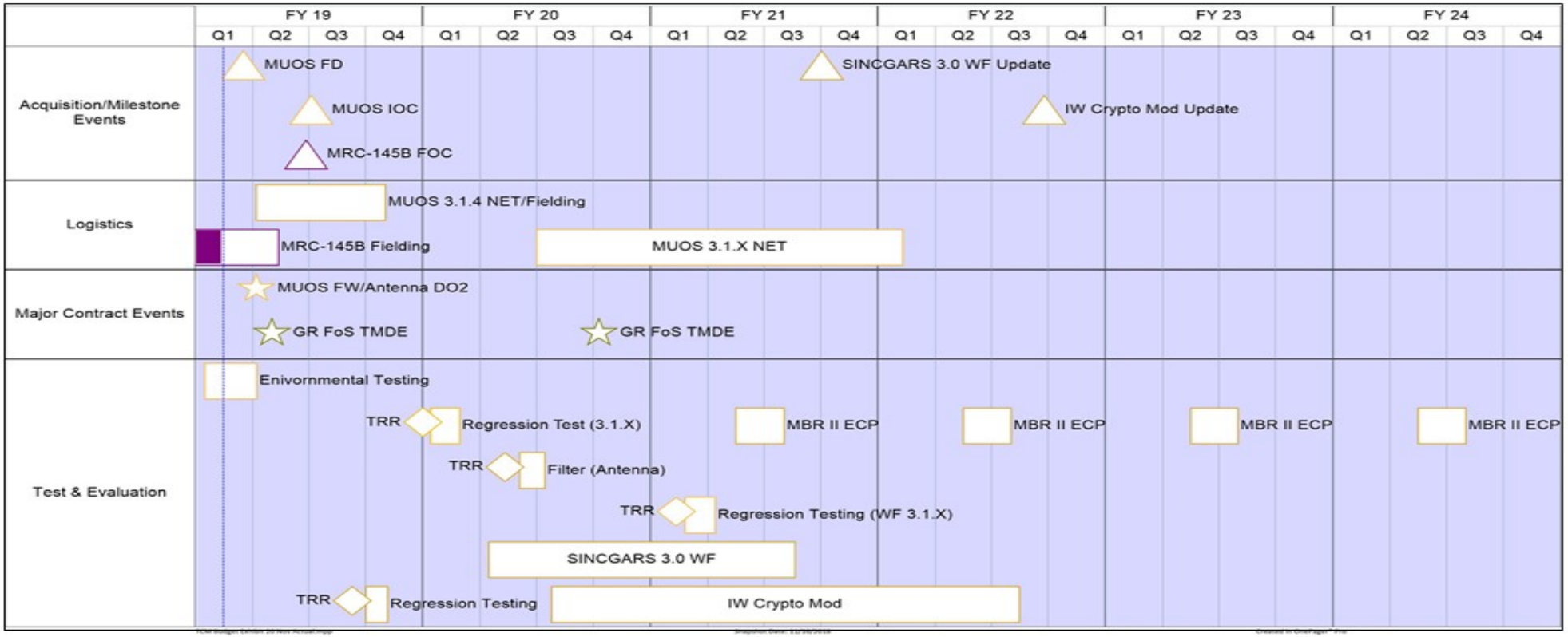


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

TCM - HFR II Program Schedule

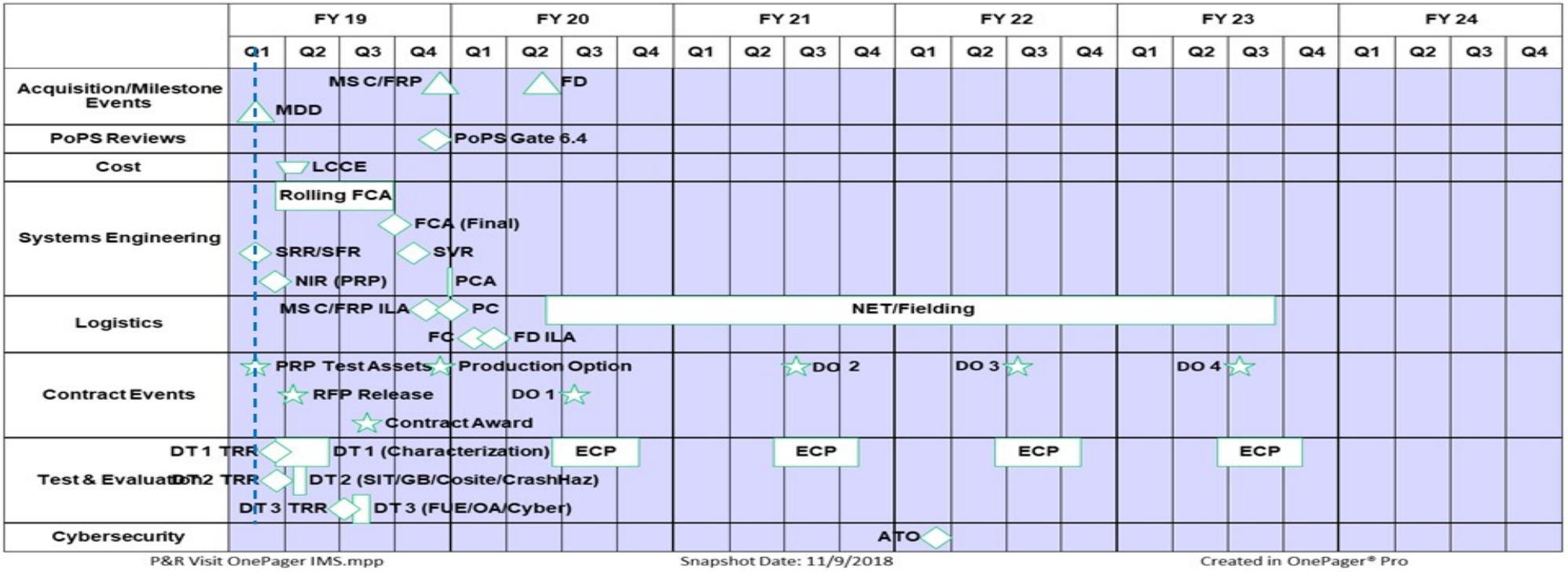


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

TCM - MCMP Schedule

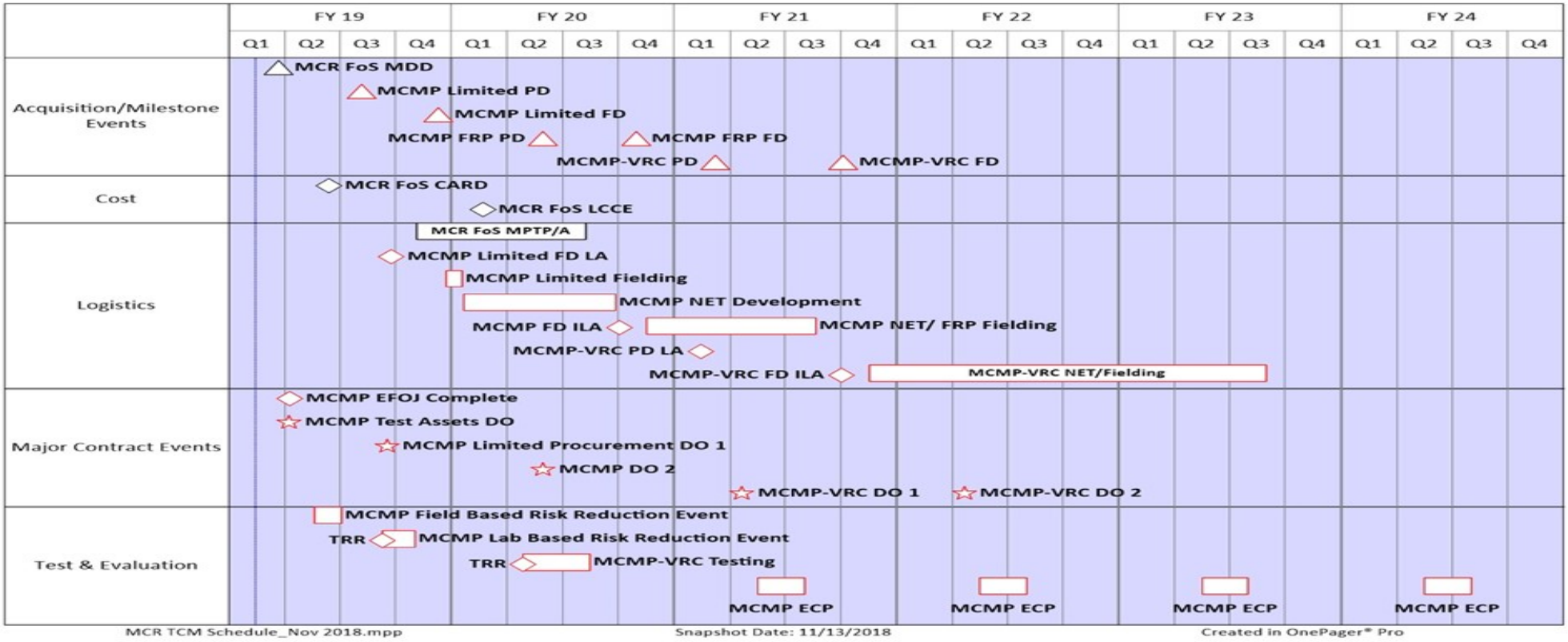


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

TCM - MCHH Schedule

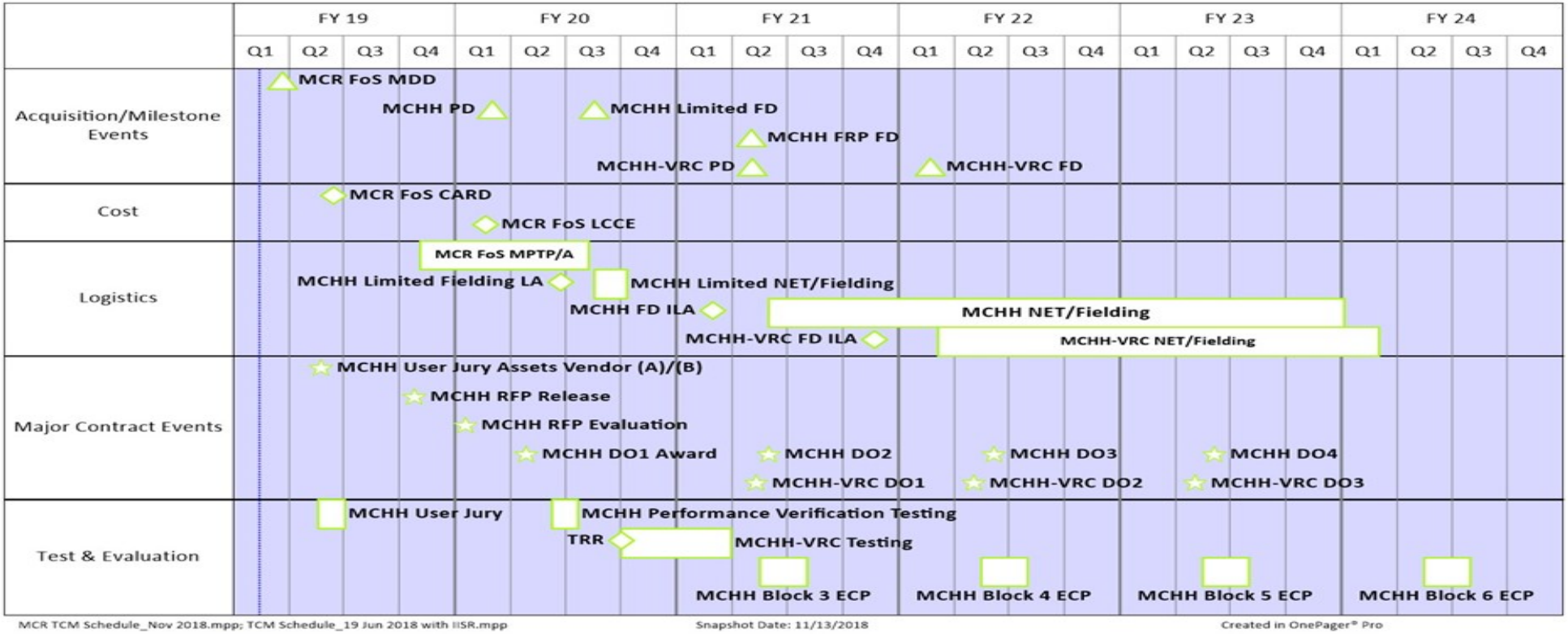


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

THC2 Portfolio

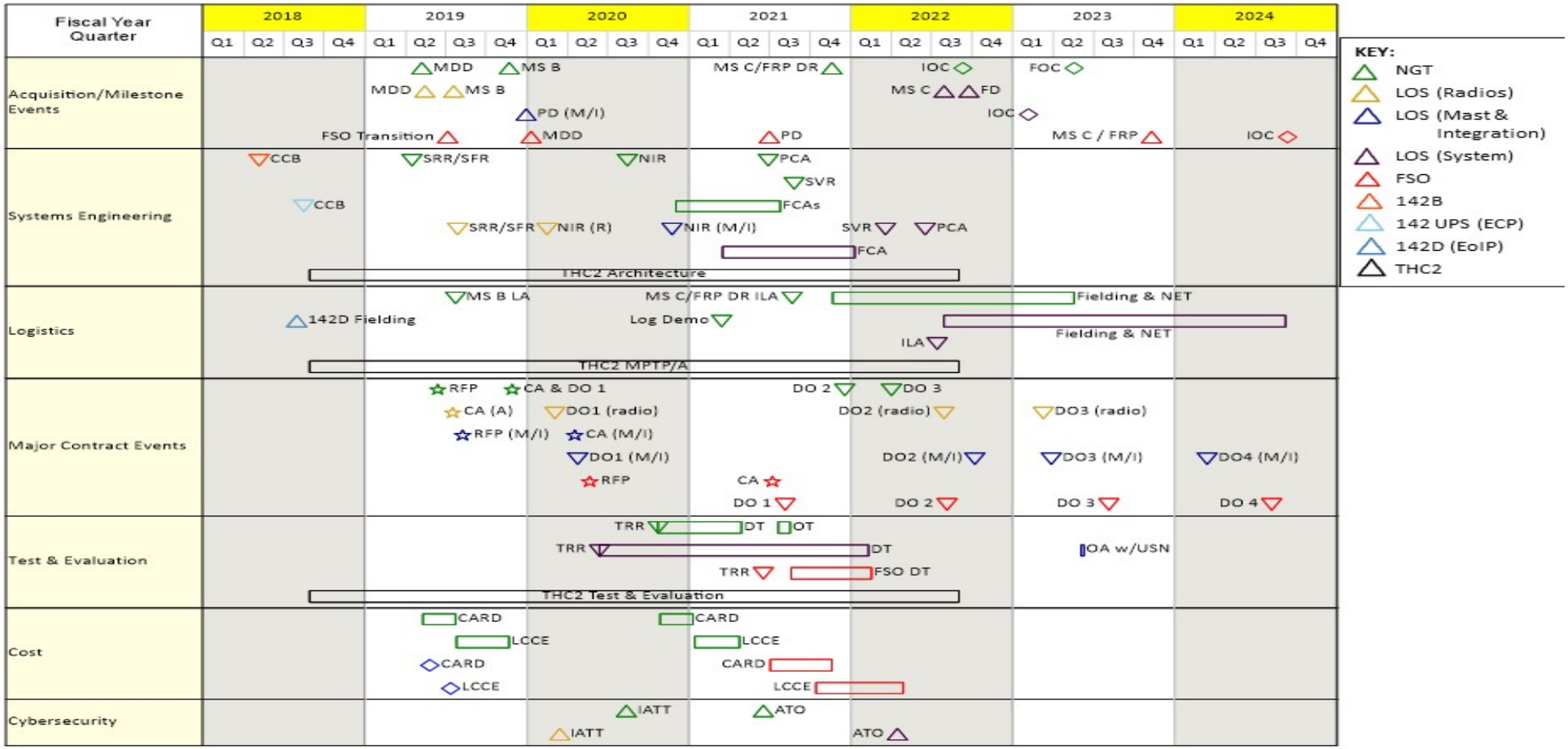


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2275 / *Marine Corps Tactical Radio Systems*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2275				
TCM MBR II MRC-145B IOC	2	2018	2	2018
TCM MBR II MUOS Procurement Decision	3	2018	3	2018
TCM MBR II MUOS Contract Award	3	2018	3	2018
TCM HFR II Test Assets Contract Award	2	2019	2	2019
TCM MBR II MUOS Contract Award #2	1	2019	1	2019
TCM MBR II MUOS Fielding Decision	1	2019	1	2019
TCM MCMP Test Assets	2	2019	2	2019
TCM MBR II MUOS IOC	3	2019	3	2019
TCM MBR II AN/MRC 145B FOC	3	2019	3	2019
TCM MCMP PD / Contract Award DO#1	3	2019	3	2019
TCM HFR II Contract Award EMD	3	2019	3	2019
TCM HFR II Procurement Decision	4	2019	4	2019
TCM HFR II Contract Award (Production Mod)	4	2019	4	2019
TCM MCMP Contract Award DO #2	2	2020	2	2020
TCM MCHH Procurement Decision	1	2020	1	2020
TCM MCMP Fielding Decision	4	2020	4	2020
TCM HFR II MP Fielding Decision	2	2020	2	2020
TCM MCHH Contract Award DO #1	2	2020	2	2020
TCM HFR II Contract Award DO #1	3	2020	3	2020
TCM MCHH Fielding Decision	2	2021	2	2021
VSAT Inflatable Satellite Antenna (ATLAS) Procurement	2	2019	2	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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**
VSAT WIN 10 Fielding	2	2019	2	2020
VSAT-E Network Package Refresh Fielding	2	2019	1	2020
VSAT MRT Procurement	3	2019	3	2019
VSAT VSAT-M Replacement MS C/LRIP	3	2019	3	2019
VSAT VSAT-M Replacement Test Asset Procurement	4	2019	4	2019
VSAT VSAT-M Replacement Testing	4	2019	1	2020
VSAT Inflatable Satellite Antenna (ATLAS) Fielding	4	2019	2	2020
VSAT MRT Implementation Decision	1	2020	1	2020
VSAT MRT Fielding	1	2020	1	2021
VSAT VSAT-M Replacement Procurement	2	2020	2	2020
VSAT Next Generation Test Asset	4	2020	4	2020
SMART-T Tech Refresh 1	3	2019	3	2019
SMART-T Tech Refresh 2	4	2019	4	2019
SMART-T Tech Refresh 3	2	2020	2	2020
NOTM GCV WIN10 Fielding Decision	1	2019	1	2019
NOTM-A Inc 2 MDA	2	2019	2	2019
NOTM Secure Communications Control Fielding	4	2019	4	2019
NOTM-A FOC	4	2020	4	2020
NOTM-UTV Fielding Decision	2	2022	2	2022
NOTM UTV IOC	3	2022	3	2022
TWTS Line Of Sight (LOS)-R MS B	3	2019	3	2019
TWTS NGT MS B	4	2019	4	2019
TWTS NGT Contract Award	4	2019	4	2019
TWTS LOS-R Radios Contract Award (Army)	3	2019	3	2019
TWTS LOS-R Radios Delivery Order 1 (DO 1)	2	2020	2	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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 LOS-R Mast & Integration Contract Award & DO 1	2	2020	2	2020
COC IV&V	3	2019	3	2019
COC Video Display Refresh	3	2019	3	2019
COC Opt Wave/NetApp	4	2019	4	2019
COC Software Releases 6.0.11.0	1	2020	1	2020
COC Software Releases 6.0.12.0	2	2020	2	2020
COC Laptop Display Refresh	2	2020	2	2020

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy											Date: March 2019	
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 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
2276: *Comms Switching and Control Sys*	44.494	2.068	1.675	1.778	-	1.778	1.815	1.653	1.686	1.719	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

(U) Network Planning & Management (NPM) is a portfolio of communications planning and Network Management applications for use throughout the Marine Air-Ground Task Force (MAGTF). NPM consists of items such as the Systems Planning Engineering and Evaluation Device (SPEED). NPM provides the Marine Forces (MARFOR) component planners with the ability to conduct high-level planning; detailed planning and engineering; monitoring; control and reconfiguration; and spectrum planning and management in support of Combatant Commander (COCOM) and Commander, Joint Task Force (CJTF) operations. SPEED provides High Frequency (HF) predictions, Line of Site (LOS) propagation, Radio Coverage Analysis (RCA), Satellite Planning, Command and Control Personal Computer (C2PC) track interface, interference and de-confliction analysis, spectrum management, Radio Guard Charts, Comm-On-The-Move (COTM), and T/E (training & education) and force structure management. Program transitioned to sustainment in FY19.

(U) Tactical Voice Switching System (TVSS): The TVSS is a modular Integrated Services Digital Network (ISDN) circuit switch capable system that combines voice and Voice Over Internet Protocol telecommunications, multiplexing, transmission encryption, and group modem capabilities in one system for command, control, administrative, and logistic voice communications. Facilitates secure and non-secure voice, circuit switching functions, and network routing and management functions with current fielded tactical systems of the military services. Interoperates with joint, coalition, and host nation networks, and operates in unclassified and classified environments. Beginning in FY19 TVSS is transitioning to an all software solution with no Hardware requirements.

(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 LAN and WAN data networking capability that forms the data communications backbone and data communications support to organizations within a MAGTF. The CDN provides extension of the Defense Information System Network (DISN), Secret Internet Protocol Router Network (SIPRNet), Sensitive But Unclassified (SBU), Non-secure Internet Protocol Router Network (NIPRNet) as well as a Coalition networking capability and access to strategic, supporting establishments, joint and other service component tactical data networks for Marine Corps Tactical Data Systems (TDSs) and other CDN. The CDN provides Marine Corps maneuver elements with a modular and scalable IP data transport capability that will replace, supplement and be used with existing legacy data systems through the integration of computers, routers, data switches and cabling, radio net interface units, modems, link encryption devices, and patch panels. Uninterrupted Power Supplies (UPS) provide for emergency power and continuity of operations. The CDN can operate from the SBU up to the Top Secret/Sensitive Compartmented Information (TS/SCI) level and contains integral In-line Network Encryption (INE) device supporting IP Security (IPSec) and Virtual Private Networking (VPN).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**
Title: NPM: Product Development	0.785	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Description: Program transitions to sustainment beginning in FY19. ***FY 2019 Plans:*** N/A ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** N/A					
Title: TVSS: Management Services ***Articles:*** ***Description:*** TVSS is transitioning to a virtual software solution with no hardware requirements. ***FY 2019 Plans:*** Continue system accreditation with annual cyber security testing. ***FY 2020 Base Plans:*** Continue development requirements and annual cyber security testing in support of transition from hardware to software solution. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $0.003 from FY19 to FY20 reflect program requirements transition to Tactical Networking portfolio.	0.001 -	0.068 -	0.065 -	0.000 -	0.065 -
Title: CDN: Product Development ***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 2019 Plans:***	0.530 -	0.550 -	0.580 -	0.000 -	0.580 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Continue development and implementation of required hardware upgrades including Small Form Factor. ***FY 2020 Base Plans:*** Continue development of required hardware upgrades to include routers and servers. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $0.030M from FY19 to FY20 reflects annual cost increase.					
Title: CDN: Test and Evaluation	0.400	0.432	0.450	0.000	0.450
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 2019 Plans:*** Continue support for joint interoperability test certification efforts demonstrated through DoD Interoperability Communication Exercises for Small Form Factor upgrade. ***FY 2020 Base Plans:*** Continue support for joint interoperability test certification efforts demonstrated through DoD Interoperability Communication Exercises for routers and servers equipment upgrades. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $0.18 from FY19 to FY20 reflects the transition to upgraded system routers.					
Title: CDN: Management Services	0.352	0.625	0.683	0.000	0.683
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. ***FY 2019 Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Continue FFRDC efforts in support of Network Optimization and reconfiguration efforts to reduce size, weight, and power (SWaP) requirements for CDN systems. ***FY 2020 Base Plans:*** Continue FFRDC efforts in support of Network Optimization and reconfiguration efforts to upgrade system routers and servers. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The increase of $0.058M is attributed to the addition of testing and evaluation of the small form factor equipment.					
Accomplishments/Planned Programs Subtotals	2.068	1.675	1.778	0.000	1.778

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• PMC/4634: *CDN*	37.128	35.844	29.944	-	29.944	35.757	36.355	37.128	37.870	Continuing	Continuing

Remarks

D. Acquisition Strategy

(U) Network Planning and Management (NPM): NPM will maximized use of existing Commercial Off-The-Shelf (COTS) and Government Off-The-Shelf (GOTS) products. NPM will continue to be upgraded as technology advances. Major focus will be on the incorporation of additional capabilities and functionality into the SPEED software to meet user requirements. R&D effort will focused on the development, integration, and testing of improved versions of existing capabilities. Program transitions to sustainment in FY19.

(U) Tactical Voice Switching System (TVSS) (formerly Transition Switch Module (TSM)): TVSS will maximize use of existing COTS, GOTS, and Government-Furnished Equipment (GFE). Major focus will be on maintaining cyber accreditation and interoperability with existing systems in the Marine Corps. R&D effort will focus on integration and testing of cyber vulnerability fixes of existing components.

(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.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

E. Performance Metrics

Milestone reviews and technical reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NPM (SPEED S/W Development)	WR	NSWC : Crane, IN	0.969	0.165	Nov 2017	0.000		0.000		-		0.000	0.000	1.134	-
NPM (SPEED S/W Development)	C/CPFF	NSWC2 : Crane, IN	0.230	0.620	Jun 2018	0.000		0.000		-		0.000	0.000	0.850	-
CDN Development Efforts	WR	SSC PAC : Philadelphia, PA	0.000	0.530	May 2018	0.550	May 2019	0.580	May 2020	-		0.580	0.000	1.660	-
Prior Year Cumulative Funding	Various	Various : Various	28.606	0.000		0.000		0.000		-		0.000	0.000	28.606	-
		Subtotal	29.805	1.315		0.550		0.580		-		0.580	0.000	32.250	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 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	0.000	5.696	-
		Subtotal	5.696	0.000		0.000		0.000		-		0.000	0.000	5.696	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CDN Testing	WR	SSC PAC : San Diego, CA	0.981	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
CDN Integration testing	WR	JITC : Ft. Huachuca, AZ	0.078	0.000		0.093	Jan 2019	0.090	Jan 2020	-		0.090	Continuing	Continuing	Continuing
CDN Testing	C/FFP	MCTSSA : San Diego, CA	0.000	0.290	May 2018	0.000		0.000		-		0.000	0.000	0.290	-
CDN Testing	C/FFP	MCSC Albany : Albany, GA	0.000	0.110	Jun 2018	0.000		0.000		-		0.000	0.000	0.110	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CDN Testing	C/FFP	NAWC-AD : Patuxent River, MD	0.000	0.000		0.339	Mar 2019	0.360	Mar 2020	-		0.360	0.000	0.699	-
Prior Year Cumulative Funding	Various	Various : Various	1.569	0.000		0.000		0.000		-		0.000	0.000	1.569	-
		Subtotal	2.628	0.400		0.432		0.450		-		0.450	Continuing	Continuing	N/A

Management Services ($ in Millions)

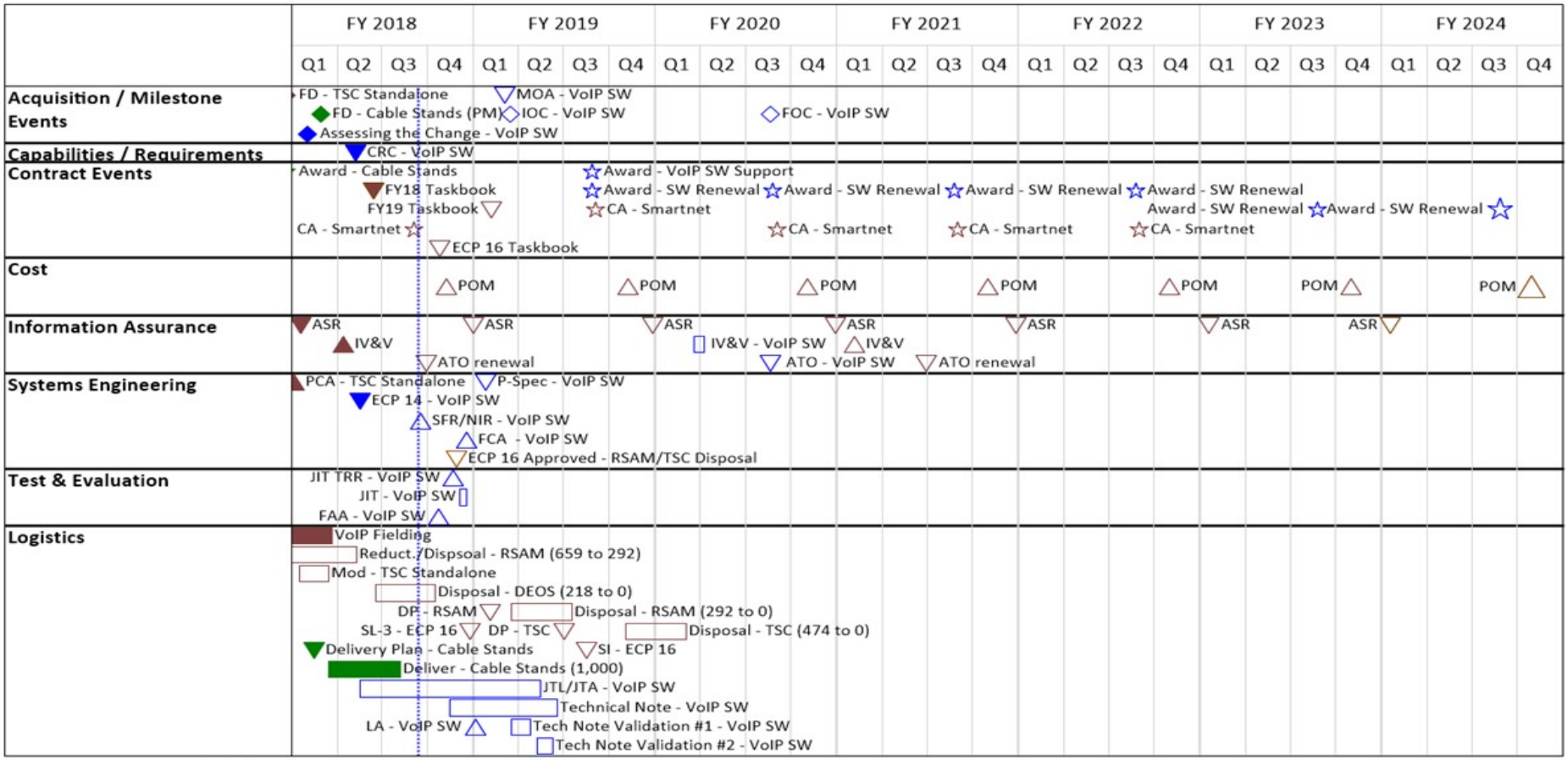
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TVSS	FFRDC	MITRE : Stafford, VA	1.081	0.001	Nov 2017	0.068	Dec 2018	0.065	Dec 2019	-		0.065	0.000	1.215	-
CDN	FFRDC	MITRE : Stafford, VA	0.837	0.352	Nov 2017	0.625	Dec 2018	0.683	Dec 2019	-		0.683	0.000	2.497	-
Prior Year Cummulative Funding	FFRDC	MITRE : Stafford, VA	4.447	0.000		0.000		0.000		-		0.000	0.000	4.447	-
		Subtotal	6.365	0.353		0.693		0.748		-		0.748	0.000	8.159	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	44.494	2.068		1.675		1.778		-		1.778	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

TVSS Program Schedule



Wired in the defense IMS 20180608.mpp; TVSS FoS IMS 20180613.mpp

Snapshot Date: 6/13/2018

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

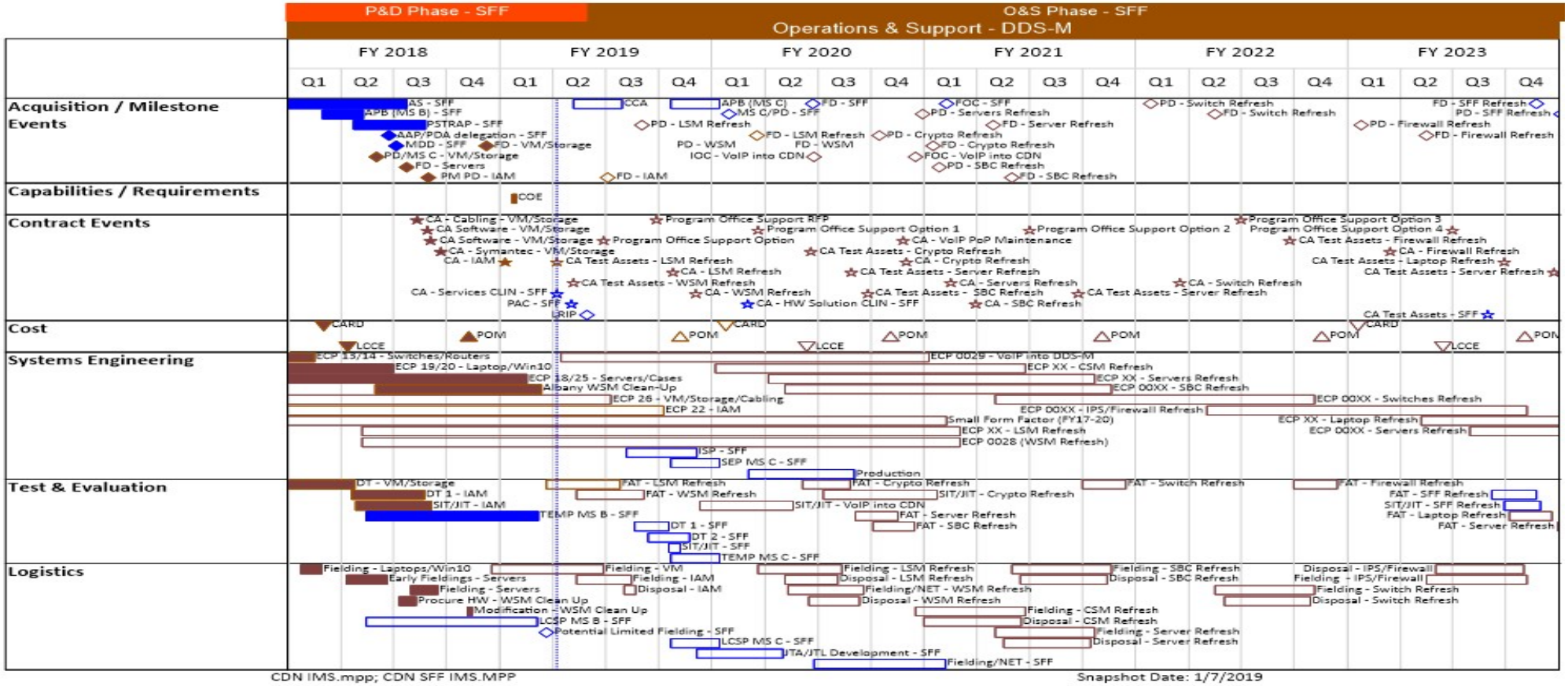


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2276 / *Comms Switching and Control Sys*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2276				
CDN ECP VMware	1	2018	2	2019
CDN ECP IAM Server	1	2018	4	2019
CDN ECP SFF	1	2018	3	2019
CDN ECP LSM & WSM Routers	3	2018	1	2021
CDN FD VMware	4	2018	4	2018
CDN LRIP Award Small Form Factor (SFF)	4	2018	4	2018
CDN Fielding VMware	1	2019	2	2019
CDN MS-C SFF	2	2019	2	2019
CDN APB MS-C	2	2019	2	2019
CDN Test & Evaluation SFF	2	2019	3	2019
CDN Limited Fielding SFF	4	2019	4	2019
CDN Fielding Decision SFF	4	2019	4	2019
CDN Production Decision LSM & WSM Routers	4	2019	4	2019
TVSS MOA for VoIP Software	1	2019	1	2019
TVSS IOC VoIP Software	1	2019	1	2019
TVSS Contract Award VoIP Software	3	2019	3	2019

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy											Date: March 2019	
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 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
2277: *System Engineering and Integration*	48.106	6.732	4.263	5.071	-	5.071	5.530	5.429	5.133	5.235	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Beginning in FY19, Marine Civil Information Management System (MARCIMS), Public Affairs System (PAS) and Military Information Support Operations (MISO) funding has been realigned to project 3772, Information Related Capabilities. Realignment of efforts to new projects in FY19 and beyond reflects USMC Program Management Office (PMO) reorganization to improve support of USMC OPFOR.

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. In 2009, 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 (Mar 2011), and priorities identified in the USMC Expeditionary Energy Water and Waste Initial Capabilities Document/Capabilities Based Assessment (Sep 2011), as well as Science and Technology Objectives identified in the 2012 USMC S&T Strategic Plan. The Marine Corps program aligns with the Commandant's Planning Guidance 2010, the National Defense Authorization Act 2009, 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 6610.01C and CJCS16241.04 respectively. This effort also covers interoperability and testing of tactical message standards such as MILSTD 6017 Variable Message Format used between the US Army and USMC; and Coalition message formats the Joint Command, Control, Consultation Information Exchange Data Model (JC3IEDM). 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 NATO Coalition interoperability initiatives, Army/Marine Corps Board support, and interoperability testing and certification to include cross domain.

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

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

SoS requirements. SEIC centralized management of 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 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.

The overall increase of $0.808M is primarily due to a $0.341M increase in field experimentation with Marine Corps Warfighting Lab for the E20 and a $0.435M increase to support pre-embarkation integration testing and reference and automation tools for deploying MEUs to support execution at the directed levels of efficiency.

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. This program transitions from C2277 to C3772 in FY19.

Public Affairs System (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 and evaluate solutions to modernize the Public Affairs Still Acquisition System into a single handheld device with the capability to acquire, edit and transmit still and video imagery and engage publics via traditional and social media. This program transitions from C2277 to C3772 in FY19.

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 (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. 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 critical to the success of the MAGTF mission, enabling commanders to shape the information environment, counter enemy propaganda, misinformation, disinformation, and adversarial narratives. The Signature Management (SIGMAN) capability will support MAGTF Operations with a baseline capability to include Own-force signature monitoring and assessment, Electromagnetic signature masking and projection, and physical decoys. This program transitions from C2277 to C3772 in FY19.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Expeditionary Energy Office (E2O)	2.177	2.160	2.501	0.000	2.501
Articles:	-	-	-	-	-
FY 2019 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 the 2012 USMC S&T Strategic Plan. Using these priority roadmaps, 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; efficient heating and cooling of people, equipment and water; energy storage; energy efficient vehicles; energy metering and monitoring and decision tools.					
FY 2020 Base Plans: - Begin field exercise experimentation with Marine Corps Warfighting Lab and its MAGTF Integration Exercise. Also, continue efforts 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 the 2012 USMC S&T Strategic Plan. Using these priority roadmaps, 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 2020 OCO Plans: No OCO funds					
FY 2019 to FY 2020 Increase/Decrease Statement: The $.341M increase is due to the planned and culminating field experimentation with Marine Corps Warfighting Lab and its MAGTF Integration Exercise.					
Title: JINTACCS: JCS and DoD CIO Data Links Testing	0.555	0.547	0.579	0.000	0.579
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 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 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. Requirements annotated in IT Budget Submit (NC-36). Increased involvement with the Army Marine Corps Board (AMCB, 3 Star Charter)), NATO Coalition Interoperability Assurance and Validation (CIAV) and Cross Domain Solution (CDS) certification. ***FY 2019 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. - Continue to provide TDL and tactical data link 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 2020 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;					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
provide feedback to JCS representatives concerning shortfalls or recommended improvements to the eSMART tool. - Continue to provide TDL and tactical data link 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 2020 OCO Plans:*** No OCO funds ***FY 2019 to FY 2020 Increase/Decrease Statement:*** No significant change from FY 2019 to FY 2020.					
Title: SEIC: Engineering and Technical Support	1.958	1.556	1.991	0.000	1.991
Articles:	-	-	-	-	-
FY 2019 Plans: - Initiate technical and engineering support to the development of the 2019 Afloat MAGTF C4 Required Capabilities (AMC4RC) Letter. - Continue to contribute to the OPNAV N9 & N2/N6 Blue-In-Support-Of-Green (BISOG) program development. - Continue engineering support to the development of USMC input to OUSD AT&L's Joint C2 Capability Area FY19/20 Integration Workshop - Continue integration MAGTF C2 systems and C4 services with shipboard C2 architectures and C4ISR infrastructures in direct support of MEU deployments via DGSIT - Conduct focused integration testing with PEO C4I & SPAWAR to integrate MCEN Services and MAGTF C4I Systems into the Navy's follow-on version of Consolidated Afloat Network Enterprise Services (CANES) environment aboard the LHD, LHA-6, LPD and LSD class amphibious assault ships - Continue to baseline and assess options to address gaps within the Information Exchange Capabilities of the MAGTF. - Continue to manage and expand the Engineering Knowledge Management system to provide consumer focused support to the engineering competency in a configuration controlled electronic library system. ***FY 2020 Base Plans:*** - Continue technical and engineering support to the development of the 2019 Afloat MAGTF C4 Required Capabilities (AMC4RC) Letter - Continue to contribute to the OPNAV N9 & N2/N6 Blue-In-Support-Of-Green (BISOG) program development					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Continue engineering support to the development of USMC input to OUSD AT&L's Joint C2 Capability Area FY19/20 Integration Workshop - Continue focused integration testing with PEO C4I & SPAWAR to integrate MCEN Services and MAGTF C4I Systems into the Navy's follow-on version of Consolidated Afloat Network Enterprise Services (CANES) environment aboard the LHD, LHA-6, LPD and LSD class amphibious assault ships - Continue to manage and expand the Engineering Knowledge Management system to provide consumer focused support to the engineering competency in a configuration controlled electronic library system - Continue integration 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 2020 OCO Plans:*** No OCO funds ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The $.435M increase supports the continuation of pre-embarkation DGSITs, SOTs/SOVTs for deploying MEUs and to provide required engineering reference and automation tools necessary to perform their functions at the directed level of efficiency.					
Title: Public Affairs System (PAS): Product Development	0.090	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: - Program transitions to C3772 ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A					
Title: MARCIMS: Marine Civil Information Management System Support	0.409	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: -Program transitions to C3772 ***FY 2020 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2020 OCO Plans:*** N/A					
Title: Military Information Support Operations (MISO): Product Development ***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. Funds transition to Project C3772 in FY19. ***FY 2019 Plans:*** - Program transitions to C3772 ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A	1.543 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	6.732	4.263	5.071	0.000	5.071

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• PMC/4620a: *MARCIMS*	0.000	0.296	0.000	-	0.000	0.302	0.000	0.308	0.314	Continuing	Continuing
• PMC/4620b: *Public Affairs Systems*	3.482	0.917	0.691	-	0.691	0.710	0.722	0.736	0.751	Continuing	Continuing
• PMC/4620c//: *MISO*	0.000	2.976	8.364	-	8.364	9.924	9.938	7.853	8.010	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

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, Interoperability Architectures, and Technology direct the JINTACCS Program. The program utilize the Naval Surface Warfare Centers for system engineering support services.

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.

E. Performance Metrics

Technical and program reviews.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	Various : Various	8.980	0.000		0.000		0.000		-		0.000	0.000	8.980	-
PAS	WR	SSC - PAC : San Diego, CA	0.286	0.090	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MISO	FFRDC	Johns Hopkins University : Laurel, MD	0.000	0.943	Aug 2018	0.000		0.000		-		0.000	0.000	0.943	-
MISO	C/FFP	MCSC : Quantico, VA	0.000	0.600	Apr 2018	0.000		0.000		-		0.000	0.000	0.600	-
		Subtotal	9.266	1.633		0.000		0.000		-		0.000	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative	Various	Not Specified : Not Specified	18.443	0.000		0.000		0.000		-		0.000	0.000	18.443	-
MARCIMS	WR	NSWC : Indian Head, MD	0.217	0.409	Feb 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
MAGTF SEI&C	C/FFP	Various : Various	0.227	0.244	Nov 2017	0.000		0.000		-		0.000	0.000	0.471	-
MAGTF SEI&C	C/FFP	SSC PAC : San Diego, CA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
MAGTF SEI&C	C/BA	NSWC Crane : Bloomington, IN	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
MAGTF SEI&C	C/BA	USA CECOM - MITRE : Aberdeen, MD	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
MAGTF SEI&C	C/BA	Naval Research Lab : Washington, DC	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
MAGTF SEI&C	WR	NSWC : Dahlgren, VA	5.203	0.280	Nov 2017	0.230	Nov 2018	0.250	Nov 2019	-		0.250	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MAGTF SEI&C	C/FFP	DTIC : FT. Belvoir	0.529	0.522	Apr 2018	0.000		0.000		-		0.000	0.000	1.051	-
MAGTF SEI&C	MIPR	HHS : Bethesda, MD	0.597	0.712	Nov 2017	0.000		0.000		-		0.000	0.000	1.309	-
MAGTF SEI&C	C/FFP	SIMVENTIONS : Stafford, VA	0.126	0.065	Nov 2017	0.000		0.000		-		0.000	0.000	0.191	-
MAGTF SEI&C	WR	NSWC : DAM NECK, VA	0.135	0.135	Nov 2017	0.000		0.150	Dec 2019	-		0.150	0.000	0.420	-
MAGTF SEI&C	C/FP	MANTECH : Stafford, VA	0.000	0.000		1.326	Nov 2018	1.591	Mar 2020	-		1.591	0.000	2.917	-
JINTACCS	C/FFP	MCTSSA : Camp Pendleton, CA	1.631	0.400	Jan 2018	0.272	Jan 2019	0.300	Mar 2020	-		0.300	0.000	2.603	-
JINTACCS	C/FFP	IEP Analysis : Quantico, VA	0.000	0.000	Jan 2018	0.225	Jan 2019	0.225	Jan 2020	-		0.225	0.000	0.450	-
Experimental Forward Operating Base (E2O)	WR	SSC PAC : San Diego, CA	1.812	0.750	Nov 2017	0.350	Nov 2018	0.612	Jan 2020	-		0.612	0.000	3.524	-
Experimental Forward Operating Base (E2O)	WR	Various : Various	0.660	0.732	Nov 2017	0.802	Nov 2018	0.558	Nov 2019	-		0.558	0.000	2.752	-
Experimental Forward Operating Base (E2O)	WR	NSWC : Carderock	0.378	0.250	Nov 2017	0.150	Nov 2018	0.403	Nov 2019	-		0.403	0.000	1.181	-
Experimental Forward Operating Base (E2O)	WR	NAVFAC EXWC : Port Hueneme, CA	0.420	0.120	Nov 2017	0.608	Nov 2018	0.119	Feb 2020	-		0.119	0.000	1.267	-
Experimental Forward Operating Base (E2O)	WR	NSWC : Panama City, FL	0.200	0.000		0.075	Nov 2018	0.334	Nov 2019	-		0.334	0.000	0.609	-
Experimental Forward Operating Base (E2O)	WR	NSWC : Crane, IN	0.451	0.300	Nov 2017	0.150	Nov 2018	0.000		-		0.000	0.000	0.901	-
Experimental Forward Operating Base (E2O)	C/FFP	DTIC : FT. Belvoir	0.025	0.025	Nov 2017	0.025	Nov 2018	0.075	Apr 2020	-		0.075	0.000	0.150	-
Experimental Forward Operating Base (E2O)	WR	NSWC Dahlgreen : Dahlgren, VA	0.000	0.000		0.000		0.400	Mar 2020	-		0.400	0.000	0.400	-
		Subtotal	31.054	4.944		4.213		5.017		-		5.017	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative	Various	Various : Various	7.611	0.000		0.000		0.000		-		0.000	0.000	7.611	-
		Subtotal	7.611	0.000		0.000		0.000		-		0.000	0.000	7.611	N/A

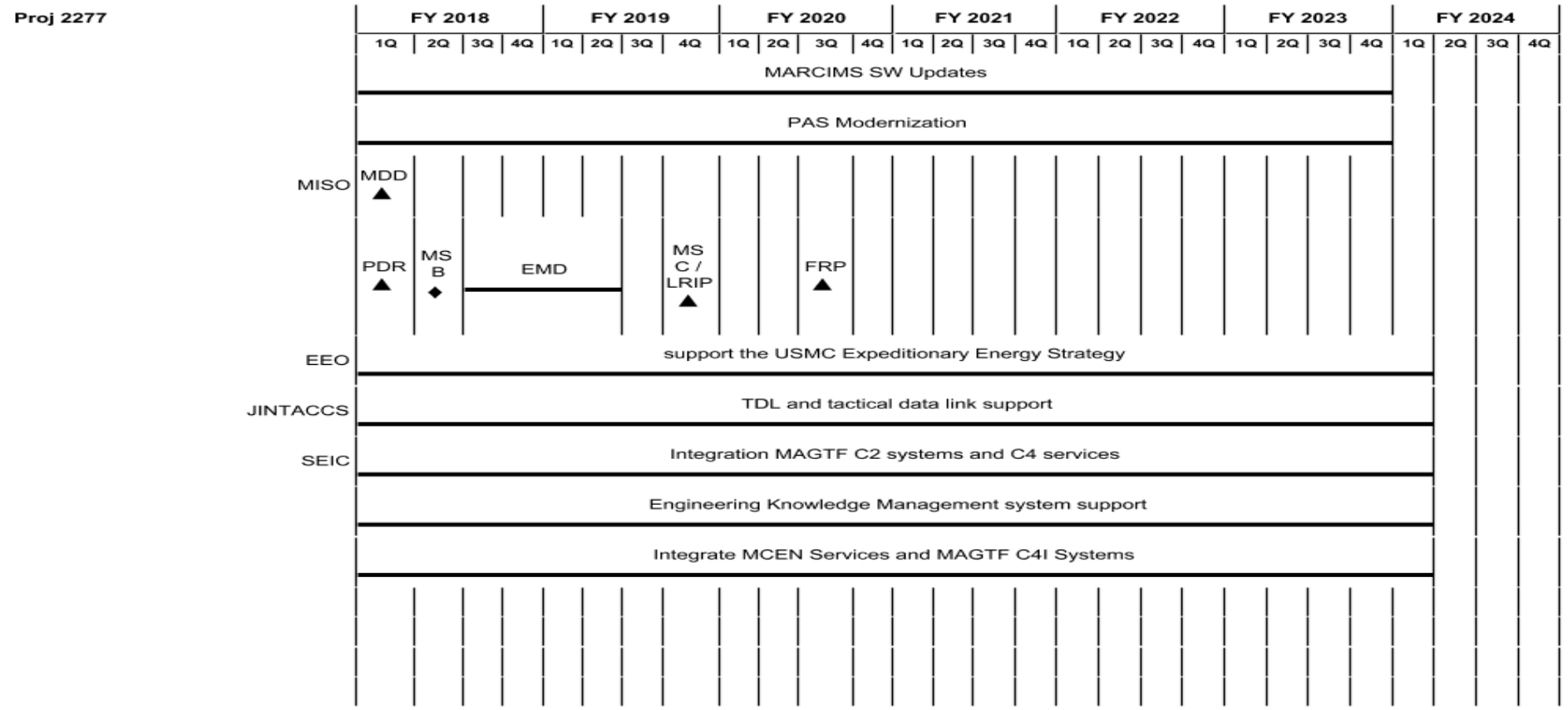
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JINTACCS-Travel	Various	PROGRAM : TRAVEL	0.175	0.155	Feb 2018	0.050	Feb 2019	0.054	Feb 2020	-		0.054	Continuing	Continuing	Continuing
		Subtotal	0.175	0.155		0.050		0.054		-		0.054	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	48.106	6.732		4.263		5.071		-		5.071	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*



2020OSD - 0206313M - 2277

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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				
MARCIMS SW Updates	1	2018	4	2023
PAS Modernization	1	2018	4	2023
MISO: MDD	1	2018	1	2018
MISO: PDR	1	2018	1	2018
MISO: MS B	2	2018	2	2018
MISO: EMD	3	2018	2	2019
MISO: MS C / LRIP	4	2019	4	2019
MISO: FRP	3	2020	3	2020
EEO: support the USMC Expeditionary Energy Strategy	1	2018	1	2024
JINTACCS: TDL and tactical data link support	1	2018	1	2024
SEIC: integration MAGTF C2 systems and C4 services	1	2018	1	2024
SEIC: Engineering Knowledge Management system support	1	2018	1	2024
SEIC: integrate MCEN Services and MAGTF C4I Systems	1	2018	1	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
2278: *Air Defense Weapons System*	91.427	28.794	89.735	49.535	15.000	64.535	36.523	12.351	26.052	26.570	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

GBAD Future Weapons System (GBAD-FWS): Recognizing that organic GBAD capability was being over matched by Unmanned Aerial Systems (UAS) proliferation four GBAD capability gaps were identified. In response to these defense gaps, the concept of an evolutionary GBAD FWS was developed. The GBAD FWS capability is being developed in three increments. Increment 1 modernizes the existing GBAD legacy systems (AMANPADS) by mounting a mix of legacy and technologically mature capabilities (from UUNS achievements) onto Joint Light Tactical Vehicles (JLTV), mitigating the risk of attacks from UAS and FW/RW aircraft, while maintaining pace with maneuver forces. Increment 2 focuses on extended range enhancement to the Increment 1 system as well as kinetic and non kinetic capabilities. Increment 3 will be a new system designed to defend fixed/semi-fixed assets against Cruise Missiles (CM) and Rockets, Artillery and Mortar (RAM) threats. GBAD FWS Increment 1 is called Marine Air Defense Integrated System (MADIS Inc 1) which has been designated an ACAT II program. MADIS Inc 1 entered development mid-FY18 leveraging the UUNS efforts and culminate in a Milestone C 1QFY20. An IOC of 4QFY21 and FOC of 4QFY25 have been established via the Capability Development Document (CDD). Inc 3 will provide medium range intercept (MRI) capability. A demonstration is slated for 4QFY19, in an effort to deliver this mission critical capability more rapidly and address emerging threats from Peer, Near Peer Competitors. Inc 3 will be compatible and integrated with CAC2S and Ground/Air Task Oriented Radar (G/ATOR) and able to operate on Marine Corps and Joint Integrated Air Defense System networks.

Ground Based Air Defense-Stinger Sustainment (GBAD-SS) - Since 2008, the GBAD mission of Low Altitude Aerial Defense (LAAD) has been accomplished with the Advanced Man Portable Air Defense System (A-MANPADS). GBAD-SS transforms Air Defense equipment through technology insertion and equipment repackaging to address capability gaps as the result of equipment obsolescence and the emergent and evolving threats to the Marine Air Ground Task Force (MAGTF). GBAD-SS consists of the following efforts: 1) systems engineering support for Stinger Mounted Optic and Mode 5/S Identification Friend or Foe (IFF); 2) design, test, and integration of new systems to replace aging and obsolescent components until replaced by MADIS Inc 1, and to retain interfaces with, and be capable of receiving, a Common Aviation Command and Control System (CAC2S) broad casted link.

Overall, the Ground Based Air Defense Weapons System $25.200M decrease from FY19 to FY20, in combined baseline and OCO funding, reflects both GBAD FWS Increment 1, known as Marine Integrated Air Defense System (MADIS Inc 1) migration to production and deployment phase and the continued pursuit of advanced technology solutions to support critical emergent CENTCOM warfighting requirements identified in JUONS #CC-0558. FY20 funding will support the Early Operational Verification and New Equipment Training development to support MADIS Inc 1 as well as continued integration of a Medium Range Intercept (MRI) capability. MADIS Inc 1 has been designated an ACAT-II program with Milestone C planned for 1QFY20, IOC in 4QFY21 and FOC in 4QFY25.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: GBAD STINGER SUSTAINMENT: Product Development	1.420	1.840	0.026	0.000	0.026

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Articles:	-	-	-	-	-
FY 2019 Plans: -Initiated system design and engineering efforts associated with the Night Sight replacement. ***FY 2020 Base Plans:*** -Completes system design and engineering efforts associated with the Night Sight replacement. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The decrease in funding from FY19 to FY20 of $1.814 reflects the ramp down of design and engineering efforts and transition into the production phase of the Night Sight replacement.					
Title: GBAD STINGER SUSTAINMENT: Support Costs	0.462	0.065	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: -Completed Analysis of Alternatives for the Night Sight replacement ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $0.065M from FY19 to FY20 due to completion of Night Sight AOA and subsequent procurement of systems					
Title: GBAD STINGER SUSTAINMENT: Test and Evaluation	0.737	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: N/A ***FY 2020 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2020 OCO Plans:*** N/A					
Title: GBAD STINGER SUSTAINMENT: Program Management Support ***Articles:*** ***FY 2019 Plans:*** N/A ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A	0.664 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: GBAD FWS/COUNTER UAS Product Development ***Articles:*** ***FY 2019 Plans:*** -Completed GBAD Future Weapons System engineering and prototype development efforts to determine the technology solutions required to defeat the full spectrum of threats to include UAS's associated with the Marine Corps Low-Altitude Air Defense mission, specifically the Group 1 and 2 threats. Systems will provide capabilities such as detect, track, identify, threat defeat and lethal destruction, to include utilizing a slew-to-cue optic system for a high energy laser engagement. Funding will purchase drone on drone and other kinetic kill capabilities, C-UAS Component Integration Kits for the Mine Resistant Ambush Protected-All Terrain Vehicle (M-ATV) and a C-UAS C2 Network. -Initiated and completed GBAD FWS MADIS Inc 1 integration by mounting a mix of legacy and technologically mature capabilities (from UUNS achievements) onto Joint Light Tactical Vehicles (JLTV), mitigating the risk of attacks from UAS and FW/RW aircraft, while maintaining pace with maneuver forces. -Initiated C2/Sensor Software and fire control radar engineering development to integrate a medium range Interceptor missile system with the existing "Kill Chain" C2 architecture. This capability will be designed to be effective against rockets, Group 3+ Unmanned Aerial Systems, mortars, cruise missiles, precision guided missiles and rotary wing/fixed wing aircraft.	22.324 -	59.898 -	13.639 -	11.782 -	25.421 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
-Initiates development of MADIS desktop training systems ***FY 2020 Base Plans:*** -Continue C2/Sensor Software engineering development to integrate a medium range intercept (MRI) system with the existing "Kill Chain" C2 architecture. This capability will be designed to be effective against rockets, Group 3+ Unmanned Aerial Systems, mortars, cruise missiles, precision guided missiles and rotary wing/fixed wing aircraft. -Initiates development and integration efforts associated with increased lethality to support constantly evolving threats. -Continues development of MADIS desktop training systems ***FY 2020 OCO Plans:*** -$11.782M provides for the rapid prototyping of equipment by pursuing advanced technology solutions in order to support critical emergent CENTCOM warfighting requirements identified in JUONS #CC-0558. Funding supports development associated with Fire Control for drone on drone and other kinetic kill capabilities, integration of C-UAS capabilities into a C2 system for airspace deconfliction & data sharing across air and ground C2 nodes. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Overall, funding decreases $34.477M from FY19 to FY20, as GBAD Increment 1, also known as Marine Integrated Air Defense System (MADIS), effort migrates to production with Milestone C 1QFY20 with an IOC of 4QFY21 and FOC of 4QFY25. MADIS Inc 1 has been designated as an ACAT-II program.					
Title: GBAD FWS/COUNTER UAS: Support Costs	1.985	18.407	22.018	0.000	22.018
Articles:	-	-	-	-	-
Description: The Government Technical Support Team provides inherently governmental support functions adding depth, breath and expertise not resident in the GBAD Program Office. Functions include 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/					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
software compatibility. Technical Team support is vital in providing both studies and analysis during the Systems Development and Demonstration phase.					
FY 2019 Plans: -Continued GBAD Future Weapons System and Counter UAS acquisition, engineering, and assessment efforts to determine the technology solutions required to defeat UAS threats associated with the Marine Corps Low-Altitude Air Defense mission. Efforts focus on C-UAS prototype software load set analysis with updates to address the ever evolving enemy threat and engineering efforts with lessons learned from the procurement of initial CUAS prototypes from FY17-19. -Initiated New Equipment Training (NET) development support efforts for MADIS Inc 1. -Initiated technical manual development support for MADIS Inc 1. -Initiated onsite engineering support at military operations, military exercises, military schools, and technology demonstrations. -Initiated engineering and logistics support to ensure systems meet reliability thresholds					
FY 2020 Base Plans: -Completion of GBAD Future Weapons System JUON and JEON acquisition, engineering, and assessment efforts to determine the technology solutions required to defeat UAS threats associated with the Marine Corps Low-Altitude Air Defense mission. Efforts focus on C-UAS prototype software load set analysis with updates to address the ever evolving enemy threat and engineering efforts with lessons learned from the procurement of initial CUAS prototypes. -Continues New Equipment Training (NET) development support efforts for MADIS Inc 1. -Continues technical manual development support for MADIS Inc 1. -Continues onsite engineering support at military operations, military exercises, military schools, and technology demonstrations. -Initiates full logistics supportability to include Independent Logistics Assessment (ILA), provisioning conferences, updates of manpower and training plan and manpower task lists for MADIS Inc 1. -Continues engineering and logistics support to ensure systems meet reliability thresholds.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Funding increases of $3.611M from FY19 to FY20 supports the ramp up of New Equipment Training and logistics supportability development efforts as well as onsite support efforts in order to ensure Warfighter safety and proficiency while operating the system.					
Title: GBAD FWS/COUNTER UAS: Test and Evaluation	0.000	8.721	13.033	3.218	16.251
Articles:	-	-	-	-	-
FY 2019 Plans: -Continued GBAD Future Weapons System Test and Evaluation of C-UAS Systems Soft-Kill and Hard-Kill prototypes integrated on both M-ATV's and JLTV's in support of JUON and JEON efforts. Testing locations include Yuma Proving Grounds AZ, NSWC Crane, NSWC Dahlgren and Quantico VA.					
FY 2020 Base Plans: -Completes GBAD Future Weapons System Test and Evaluation of C-UAS Systems Soft-Kill and Hard-Kill prototypes integrated on both M-ATV's and JLTV's in support of JUON and JEON efforts. -Initiates GBAD Future Weapons System Early Operational Verification (EOV) of MADIS Inc 1, leveraging the completed Test and Evaluation of the C-UAS systems. Testing locations include Yuma Proving Grounds AZ, Crane, IN, and White Sands Missile Range NM.					
FY 2020 OCO Plans: $3.218M provides for the test and evaluation of C-UAS "hard kill" capabilities to support urgent OCONUS needs identified in CENTCOM JUONS #CC-0558. Funding supports the Live Fire Test and Evaluation of the Fire Control for the drone on drone and other kinetic kill capabilities as well as the test and evaluations of the integration of C-UAS capabilities into a C2 system for airspace deconfliction & data sharing across air and ground C2 nodes and the mobile desktop trainer.					
FY 2019 to FY 2020 Increase/Decrease Statement: Funding increase of $7.530M from FY19 to FY20 to support testing, assessment and evaluation to include EOV of MADIS Inc 1, C2 software testing and Weapon System Evaluation Safety Review Board (WSESRB) in support of MADIS Inc 1 and Inc 3 Medium Range Intercept (MRI).					
Title: GBAD FWS/COUNTER UAS: Program Management Support	1.202	0.804	0.819	0.000	0.819
Articles:	-	-	-	-	-
FY 2019 Plans: -Continued GBAD Future Weapons System acquisition documentation to include the initiation of the Fielding Plan, the Life Cycle Sustainment Plan and the Programmatic Environmental Safety and Occupational Health					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Evaluation (PESHE) which are all required documentation to support new technology solutions required to defeat the full spectrum or threats associated with the Marine Corps Low-Altitude Air Defense mission. ***FY 2020 Base Plans:*** -Continues development of GBAD Future Weapons System acquisition documentation for both MADIS Inc 1 and Inc 3 Medium Range Intercept (MRI). ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The funding increase of $0.015M in FY20 funds acquisition documentation support for the new MADIS ACAT II program.					
Accomplishments/Planned Programs Subtotals	28.794	89.735	49.535	15.000	64.535

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• PMC/3006: *GBAD*	10.026	18.334	175.998	-	175.998	267.976	238.980	233.442	238.127	21.675	1,316.775
• RDTEN/0206313M/9999: *FOB Protection-Counter-UAS*	51.959	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	81.920

Remarks

D. Acquisition Strategy

GBAD Ground Based Air Defense- Future Weapons Systems (GBAD FWS)-The GBAD FWS capability will be developed in three increments. Increment 1 modernizes the existing GBAD legacy systems (A-MANPADS) by mounting a mix of legacy and technologically mature capabilities (from UUNS achievements) onto new tactical vehicles, Joint Light Tactical
Vehicles (JLTV), mitigating the risk of attacks from UAS and FW/RW aircraft, while maintaining pace with maneuver forces. Increment 2 focuses on extended range enhancement to the Increment 1 system along with the replacement of the Stinger missile. Increment 3 will be a new medium range intercept (MRI) capability designed to defend fixed/semi-fixed assets against Cruise Missiles (CM) and Rockets, Artillery, and Mortars (RAM) threats. GBAD FWS Increment 1 is called Marine Air Defense Integrated System (MADIS Inc 1), which has been designated an ACAT II program. MADIS Inc 1 will enter development phase mid FY18 and culminate in a Milestone C 1QFY20. Initial MADIS Inc 1 integration and development will be accomplished by Naval Surface Warfare Centers Crane and Dahlgren. An IOC of 4QFY21 and FOC of 4QFY25 have been established. To support a Material Support Decision, a concept demonstration of a proposed CM defense system has been planned for 4QFY19.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

Initial design and integration reviews for this CM system are underway at this time. A 4QFY19 Accelerated Acquisition decision from Deputy Assistant Secretary of the Navy (DASN) Expeditionary & Logistics Management (E&LM) is planned to place Inc 3 Medium Range Intercept under the Middle Tier Acquisition guidelines.

E. Performance Metrics

Integrated Master Schedule
OSD Financial Benchmarks
Technical Performance Measures
Probability of Program Success (PoPS) Assessments

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GBAD FWS MRI-SDD	MIPR	SCO : Arlington, VA	0.000	0.000		0.000		1.500	Jan 2020	-		1.500	0.000	1.500	-
GBAD FWS SDD	MIPR	ARL : Adelphi,MD	0.000	1.293	Oct 2018	1.575	Mar 2019	0.000		-		0.000	0.000	2.868	-
GBAD FWS SDD	Various	NSWC : Dahlgren, VA	0.000	1.098	Jul 2018	0.395	Nov 2018	2.101	Oct 2019	-		2.101	0.000	3.594	-
GBAD FWS SDD	MIPR	YPG : Yuma, AZ	0.000	0.915	Feb 2018	0.000		0.000		-		0.000	0.000	0.915	-
GBAD FWS SDD	MIPR	TSMO : Redstone Arsenal, AL	0.000	0.385	Nov 2017	0.000		0.000		-		0.000	0.000	0.385	-
GBAD FWS MRI-SDD	TBD	MCSC : Quantico, VA	0.000	0.000		0.000		4.500	Nov 2019	-		4.500	0.000	4.500	-
GBAD FWS MRI-SDD	C/FFP	Raytheon Solypsis : Fulton, MD	0.000	0.000		0.000		4.000	Nov 2019	-		4.000	0.000	4.000	-
GBAD-SS- SDD	WR	NSWC : Dahlgren, VA	0.807	0.356	Oct 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
GBAD-SS- SDD	WR	NSWC : Crane.IN	5.001	0.421	Nov 2017	1.840	Apr 2019	0.026	Dec 2019	-		0.026	Continuing	Continuing	Continuing
GBAD-SS-SDD	Various	VARIOUS : VARIOUS	7.360	0.643	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
GBAD FWS MRI-SDD	MIPR	DOTC : Picatinny, NJ	14.090	4.548	Feb 2018	0.645	Mar 2019	0.000		-		0.000	0.000	19.283	-
GBAD FWS GFE	MIPR	DLA : Philadelphia, PA	0.000	7.454	Mar 2018	37.079	Mar 2019	0.000		-		0.000	0.000	44.533	-
GBAD FWS SDD	Various	NSWC : Crane.IN	0.000	6.115	Sep 2018	6.631	Jul 2019	1.538	Dec 2019	-		1.538	0.000	14.284	-
GBAD FWS SDD	Various	Raytheon : Washington, DC	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
GBAD FWS SDD	Various	VARIOUS : VARIOUS	8.872	0.516	Sep 2018	0.136	Jul 2019	0.000		-		0.000	0.000	9.524	-
GBAD FWS OCO SDD	Various	PD CRAM : Redstone Arsenal, AL	0.000	0.000		0.000		0.000		11.782	Dec 2019	11.782	0.000	11.782	-
GBAD FWS OCO SDD	Various	NSWC : Crane.IN	0.000	0.000		13.437	Jul 2019	0.000		-		0.000	0.000	13.437	-
Prior Years Cumulative Funding	Various	N/A : N/A	30.197	0.000		0.000		0.000		-		0.000	0.000	30.197	-
		Subtotal	66.327	23.744		61.738		13.665		11.782		25.447	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Overall decrease of $36.291M from FY19 to FY20 is comprised of:
GBAD SDD decrease of $59.134M from FY19 to FY20 reflects drop in product development as MADIS Inc 1 begins production with the installation of multiple C-UAS components on the Joint Lightweight Tactical Vehicle (JLTV).
$11.782M OCO increase for PD CRAM provides for the development of C-UAS hard kill capabilities to support urgent OCONUS needs identified in CENTCOM JUONS #CC-0558.
$1.706M increase for GBAD FWS SDD to Dahlgren supports the ramp up associated with the development of the MADIS desktop training systems.
$9.355M increase for MRI SDD supports the Fire Control Radar Development and integration as well as the integration of an existing radar and command and control system in support of a Medium Range Intercept Capability

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GBAD FWS Eng Spt	C/FFP	MITRE : Herndon, VA	0.000	0.000		0.493	Sep 2019	0.805	Sep 2020	-		0.805	0.000	1.298	-
GBAD FWS NET Spt	TBD	MCSC : Quantico, VA	0.000	0.000		4.953	May 2019	6.240	May 2020	-		6.240	0.000	11.193	-
GBAD FWS Tech Spt	TBD	MCSC : Quantico, VA	0.000	0.000		0.307	Jan 2019	0.880	Jan 2020	-		0.880	0.000	1.187	-
GBAD-SS Eng Spt	WR	NSWC : Crane, IN	3.008	0.462	Jan 2018	0.065	May 2019	0.000		-		0.000	Continuing	Continuing	Continuing
GBAD FWS Eng Spt/HSI	Various	NSWC : Dahlgren	3.880	0.883	Dec 2017	5.858	Mar 2019	2.496	Dec 2019	-		2.496	0.000	13.117	-
GBAD FWS Eng Spt/NET/ FSR Spt	Various	NSWC : Crane, IN	0.000	0.758	Aug 2018	3.437	Jul 2019	9.959	Dec 2019	-		9.959	0.000	14.154	-
GBAD FWS C2 Spt	Various	PM CRAM : Redstone Arsenal, AL	0.000	0.000		0.750	Apr 2019	0.000		-		0.000	0.000	0.750	-
GBAD FWS Eng Spt/ILS	Various	VARIOUS : VARIOUS	0.000	0.344	Mar 2018	0.722	Jul 2019	1.638	Dec 2019	-		1.638	0.000	2.704	-
GBAD FWS OCO Eng Spt	WR	NSWC : Crane, IN	0.000	0.000		1.887	Feb 2019	0.000		-		0.000	0.000	1.887	-
Prior Years Cumulative Funding	Various	N/A : N/A	4.388	0.000		0.000		0.000		-		0.000	0.000	4.388	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			11.276	2.447		18.472		22.018		-		22.018	Continuing	Continuing	N/A

Remarks

Total increase of $3.546 from FY19 to FY20 supports the following:
$0.312M increase in GBAD FWS MITRE to support engineering efforts ensuring systems meet reliability thresholds.
$9.298M increase in GBAS FWS Tech Spt/NET/FSR/ILS supports the ramp up of New Equipment Training and technical manual development as well as logistics support ensuring systems meet reliability thresholds.
$3.362M decrease in GBAD FWS Eng Spt/HSI support at NSWC Dahlgren in Base and OCO supports the transition to NSWC Crane for NET development and onsite engineering efforts
$0.750M decrease in GBAD FWS C2 Spt at PD CRAM due to transition of efforts into production for MADIS Inc 1
$1.887M decrease in GBAD FWS OCO Eng Spt due to transition of efforts to NSWC Crane for NET development and onsite engineering efforts
$0.065M decrease in GBAD SS Eng Spt due to the completion of the design and engineering of the Night Sight replacement and transition into production

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GBAD FWS EOV	WR	NSWC Corona : Corona, CA	0.000	0.000		1.125	Nov 2018	1.688	Nov 2019	-		1.688	0.000	2.813	-
GBAD FWS Test Range	MIPR	White Sands Missile Range : White Sands, NM	0.000	0.000		2.000	Feb 2019	1.762	Feb 2020	-		1.762	0.000	3.762	-
GBAD FWS EOV	Various	NSWC Crane : Crane, IN	0.000	0.000		1.887	Mar 2019	4.019	Mar 2020	-		4.019	0.000	5.906	-
GBAD FWS OCO Live Fire Test	MIPR	PD CRAM : Redstone Arsenal, AL	0.000	0.000		0.000		0.000		3.218	Dec 2019	3.218	0.000	3.218	-
GBAD-SS OT	MIPR	ARMY : VARIOUS	0.050	0.737	Nov 2017	0.000		0.000		-		0.000	0.000	0.787	-
GBAD FWS EOV	C/FFP	Lumbee Tribe : Pembroke, NC	0.000	0.000		3.151	Apr 2019	4.727	Apr 2020	-		4.727	0.000	7.878	-
GBAD FWS EOV	C/FFP	Cherokee Nation : Tulsa, OK	0.000	0.000		0.558	Jul 2019	0.837	Jul 2020	-		0.837	0.000	1.395	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	N/A : N/A	6.223	0.000		0.000		0.000		-		0.000	0.000	6.223	-
		Subtotal	6.273	0.737		8.721		13.033		3.218		16.251	0.000	31.982	N/A

Remarks

Funding increases $4.312M from FY19 to FY20 support the initiation of the Early Operational Verification (EOV) required for MADIS Inc 1. Testing locations include Yuma Proving Grounds AZ, White Sands Missile Range NM, Crane IN and Quantico VA.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GBAD FWS Travel	Various	PMO Travel : Quantico, VA	0.000	0.000		0.275	Sep 2019	0.290	Sep 2020	-		0.290	0.000	0.565	-
GBAD FWS PMO Spt	WR	NSWC : Crane, IN	0.000	0.000		0.265	Nov 2019	0.265	Nov 2019	-		0.265	0.000	0.530	-
GBAD FWS PMO Spt	WR	NSWC : Dahlgren, VA	0.000	0.000		0.264	Nov 2018	0.264	Nov 2019	-		0.264	0.000	0.528	-
GBAD-SS Travel	Various	PMO Travel : Quantico, VA	0.298	0.098	Sep 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
GBAD-SS PMO Spt	WR	NSWC : Dahlgren, VA	0.764	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
GBAD-SS PMO Spt	C/FP	Alexandria Insights : Quantico, VA	0.000	0.566	Dec 2017	0.000		0.000		-		0.000	0.000	0.566	-
GBAD FWS PMO Spt	C/FP	Alexandria Insights : Quantico, VA	2.156	1.202	Dec 2017	0.000		0.000		-		0.000	0.000	3.358	-
Prior Years Cumulative Funding	Various	N/A : N/A	4.333	0.000		0.000		0.000		-		0.000	0.000	4.333	-
		Subtotal	7.551	1.866		0.804		0.819		-		0.819	Continuing	Continuing	N/A

Remarks

Funding increase of $0.015M from FY19 to FY20 provides vital acquisition support for a new, stand-alone, GBAD Program Office as a result of the MADIS Inc 1 program being designated as an ACAT II Program.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	91.427	28.794		89.735		49.535		15.000		64.535	Continuing	Continuing	N/A

Remarks

Overall, the Air Defense Weapons System $25.200M decrease from FY19 to FY20, in combined baseline and OCO funding, reflects GBAD Increment I called Marine Integrated Air Defense System (MADIS) which has been designated an ACAT-II program migration to procurement with a Milestone C 1st QFY-20. An IOC of 4th QFY-21 and FOC of 4QFY25.

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

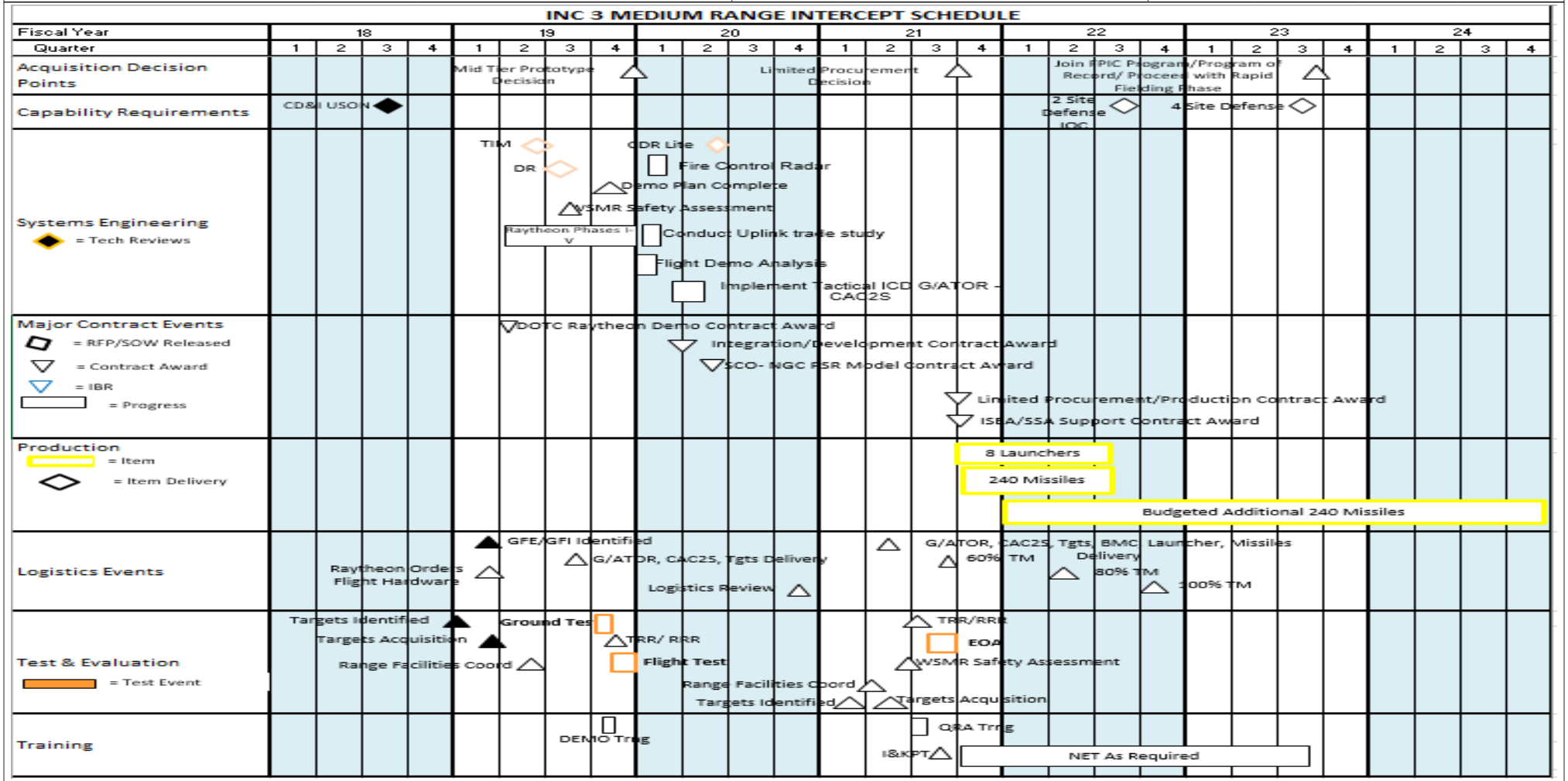


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

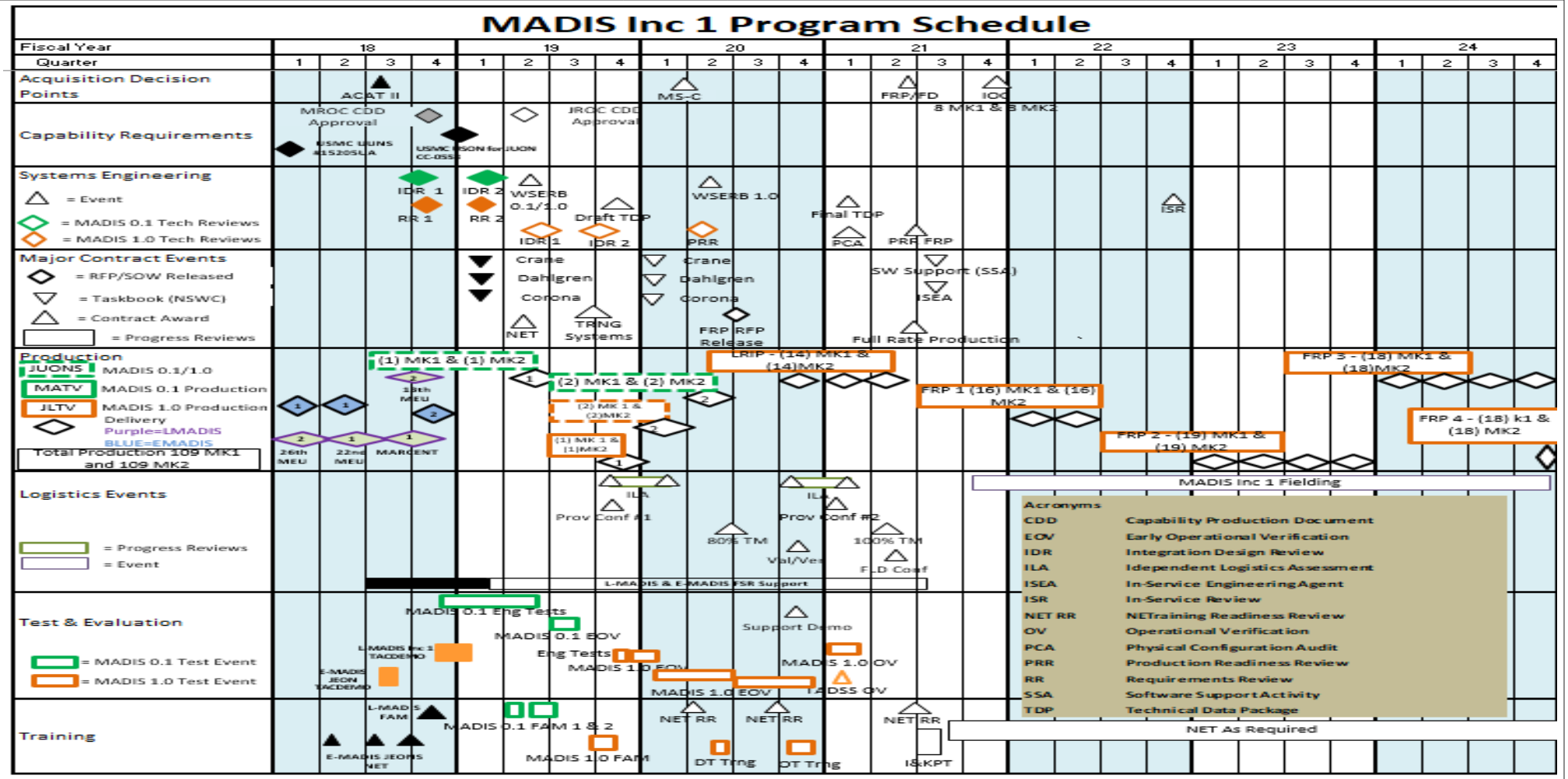


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2278 / *Air Defense Weapons System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
STINGER SLEP				
SLEP DELIVERIES	1	2018	1	2018
AMANPADS				
INC 1 FIELDING	1	2018	4	2018
IFF				
OT/FUE	2	2018	4	2018
PROCUREMENT DECISION	1	2019	1	2019
INITIAL CONTRACT AWARD	2	2019	2	2019
PRODUCTION AND DELIVERIES	2	2019	3	2022
COUNTER-UAS				
JUON/JEON ACQUISITION	1	2018	4	2020
L-MADIS INTEGRATION	4	2018	4	2019
MADIS INC 0 INTEGRATION	4	2018	1	2020
E-MADIS INTEGRATION	3	2018	2	2020
JUON TEST & EVALUATION	3	2018	4	2020
JUON TRAINING	2	2018	4	2020
MADIS INCREMENT-1				
ACQUISITION STRATEGY/ACQUISITION PLAN DEVLOPMENT	1	2018	4	2019
CAPABILITY DEVELOPMENT DOCUMENT	4	2018	4	2018
INTEGRATION DESIGN/ ENGINEERING	4	2018	4	2019
MS "C"/LRIP DECISION	1	2020	1	2020
LRIP CONTRACT AWARD	2	2020	2	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
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*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
LRIP COMPONENT PRODUCTION/ INSTALLATION	2	2020	2	2021
EARLY OPERATIONAL VERIFICATION	1	2020	4	2020
OPERATIONAL VERIFICATION	1	2021	1	2021
FULL RATE PRODUCTION DECISION	2	2021	2	2021
FULL RATE PRODUCTION CONTRACT AWARD	2	2021	2	2021
FULL RATE COMPONENT PRODUCTION/ INSTALLATION	3	2021	4	2024
INITIAL OPERATIONAL CAPABILITY	4	2021	4	2021
INC 3 MEDIUM RANGE INTERCEPT (MRI)				
INC 3 MEDIUM RANGE INTERCEPT	1	2019	4	2024
DOTC CONTRACT AWARD (DEMO)	2	2019	2	2019
C2 SENSOR & SOFTWARE INTEGRATION	1	2019	2	2021
DEMO TRAINING	4	2019	4	2019
MRI 'CUE TO SLEW" INTEGRATION DEMO	4	2019	4	2019
MIDDLE TIER PROTOTYPE DECISION	4	2019	4	2019
ENG OPERATIONAL TEST (EOA)	3	2021	3	2021
LIMITED PROCUREMENT DECISION	3	2021	3	2021
LIMITED PRODUCTION CONTRACT AWARD	4	2021	4	2021
PRODUCTION	4	2021	4	2024
NEW EQUIPMENT TRAINING	4	2021	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy											Date: March 2019	
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 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
2510: *MAGTF CSSE & SE*	300.033	1.123	1.307	1.814	-	1.814	0.962	0.972	0.991	1.010	Continuing	Continuing
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 Operation Planning and Execution System (JOPES) to register update and validate 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) 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.

BASE TELECOMMUNICATIONS INFRASTRUCTURE (BTI) provides all Marine Corps installations with the base area network communications infrastructure that connects the end-user to the DISA network. BTI modernizes, sustains, upgrades and enhances the telecommunications systems infrastructure for all Marine Corps Installations in order to meet the demands required to support the 5th Element of the Marine Air Ground Task Force (MAGTF). BTI is designed to maintain current industry standards as they relate to technological capabilities for all voice, video and data services and are transported via each installation's infrastructure. These data services include, support for but are not limited to: Enhanced 911 (E911), Video-Teleconferencing, Integrated Services Digital Network, Marine Corps Enterprise Network, Energy Monitoring Control Systems, Intrusion Detection Systems, Access Control Systems, Fire Alarm Control Networks and Fleet Training Systems. This includes supporting systems such as optical networks, telecommunications management systems, primary power, voice mail, teleconferencing, and outside plant infrastructure. The ongoing focus is technology refresh and standardization on DISA Unified Capabilities (UC) (voice, video, collaboration, and data) through modernization of installation infrastructure in order to maintain connection to the DISA network.

MAGTF LOGISTICS SUPPORT SYSTEMS (MLS2): 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 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2510 / *MAGTF CSSE & SE*

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.

The FY19 to FY20 increase of $0.507M is principally due to JFRG II updating from Ozone Widget Framework to Ozone Widget Framework Version 8.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: JOINT FORCES REQUIREMENT GENERATION II (JFRG II)	0.198	0.197	1.161	0.000	1.161
Articles:	-	-	-	-	-
FY 2019 Plans: -Initiated Engineering Change Proposals (ECPs)to increase user functionality.					
FY 2020 Base Plans: -Continue Engineering Change Proposals (ECPs), initiate platform update from Ozone Widget Framework (OWF) to Ozone Widget Framework Version 8) and initiate Cross Domain Solution Development.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: The FY19 to FY20 increase of $.964M supports the platform update from Ozone Widget Framework to Ozone Widget Framework Version 8.					
Title: BASE TELECOM (BTI)	0.000	0.458	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: Completed test and evaluation (T&E) engineering support for Defense Information Systems Agency (DISA) Unified Capabilities (UC) (voice, video, collaboration, and data) implementation.					
FY 2020 Base Plans: N/A					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Funding decrease of $0.458M from FY 2019 to FY 2020 reflects BTI's RDTEN efforts transitioning to post fielding engineering support and analysis.					
Title: MAGTF LOGISTICS SUPPORT SYSTEMS (MLS2)	0.925	0.652	0.653	0.000	0.653
Articles:	-	-	-	-	-
FY 2019 Plans: - Continue to develop Wireless Access Module (WAM) prototypes in order to enable organic level maintenance on LAV, Tank, AAV, and Heavy Equipment weapon systems. - Initiate efforts to develop software applications for the Health Management System (HMS) in order to push and pull data, conduct software configuration management, and generate maintenance reports. - Initiate efforts to develop government off the shelf (GOTS) diagnostic software capabilities for Heavy Equipment and Motor Transport weapon systems in order to decrease their life cycle costs.					
FY 2020 Base Plans: - Continue to develop additional GOTS diagnostic software capability for additional Heavy Equipment, Motor Transport, and Ordnance 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 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: The $.001M increase from FY19 to FY20 reflects additional GOTS diagnostic software development and enhancements for Ordnance supported weapon systems.					
Accomplishments/Planned Programs Subtotals	1.123	1.307	1.814	0.000	1.814

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• PMC/BLI 463500 BTI: *BTI*	26.152	45.720	14.897	-	14.897	30.217	72.596	83.722	82.402	Continuing	Continuing
• PMC/BLI 418100: *MAGTF Logistics Support Systems*	7.624	10.453	10.540	-	10.540	12.358	12.473	12.527	12.778	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2510 / *MAGTF CSSE & SE*

D. Acquisition Strategy

JOINT FORCES REQUIREMENT 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) in FY19 when it will be replaced by the modernized version. Future capability improvements as identified in the JC2 CDD will be implemented through the configuration management process.

BASE TELECOMMUNICATIONS INFRASTRUCTURE (BTI) provides all Marine Corps installations with the base area network communications infrastructure that connects the end-user to the DISA network. BTI modernizes, sustains, upgrades and enhances the telecommunications systems infrastructure for all Marine Corps Installations in order to meet the demands required to support the 5th Element of the Marine Air Ground Task Force (MAGTF). Participation in the DISA Unified Capabilities Master Plan (voice, video, collaboration, and data) is critical to BTI modernization strategy. The RDT&E funds will be utilized for analysis, research and evaluation of Unified Capabilities (UC) (voice, video, collaboration, and data) implementation efforts.

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.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JFRG II	C/IDIQ	SAIC : Stafford, VA	2.293	0.198	Dec 2018	0.197	Aug 2019	1.161	Aug 2020	-		1.161	Continuing	Continuing	Continuing
EMSS/MAGTF Logistics Support Systems	WR	NSWC, Crane : Crane, IN	0.540	0.925	Feb 2018	0.652	Feb 2019	0.653	Feb 2020	-		0.653	0.000	2.770	-
Prior Years Cumulative Funding	Various	Various : Various	283.253	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	286.086	1.123		0.849		1.814		-		1.814	Continuing	Continuing	N/A

Remarks

The FY19 to FY20 increase supports the platform update from Ozone Widget Framework to Ozone Platform for JFRG II.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years Cumulative Funding	Various	Various : Various	8.214	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	8.214	0.000		0.000		0.000		-		0.000	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BTI	MIPR	MITRE : Aberdeen Proving Ground, MD	1.590	0.000		0.458	Jan 2019	0.000		-		0.000	Continuing	Continuing	Continuing
Prior Years Cumulative Funding	Various	Various : Various	4.143	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	5.733	0.000		0.458		0.000		-		0.000	Continuing	Continuing	N/A

	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	300.033	1.123		1.307		1.814		-		1.814	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 2510 / *MAGTF CSSE & SE*	

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2510 / *MAGTF CSSE & SE*

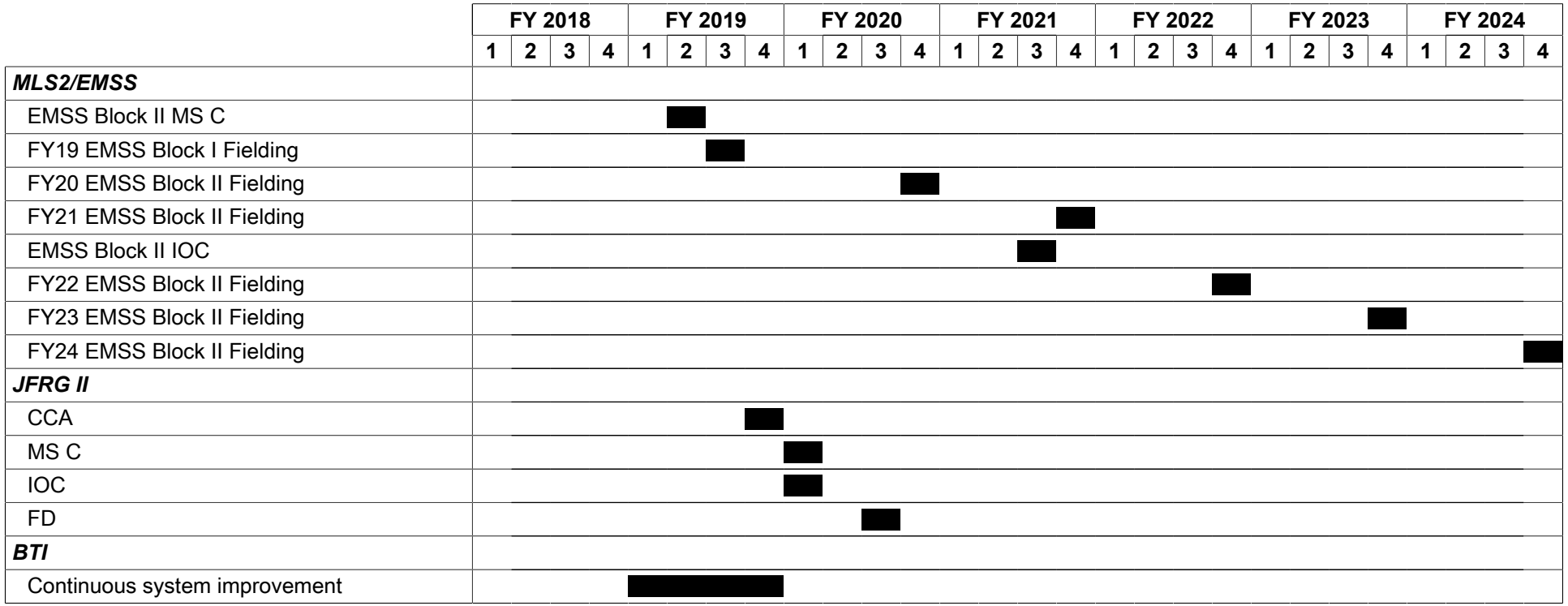


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 2510 / *MAGTF CSSE & SE*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MLS2/EMSS				
EMSS Block II MS C	2	2019	2	2019
FY19 EMSS Block I Fielding	3	2019	3	2019
FY20 EMSS Block II Fielding	4	2020	4	2020
FY21 EMSS Block II Fielding	4	2021	4	2021
EMSS Block II IOC	3	2021	3	2021
FY22 EMSS Block II Fielding	4	2022	4	2022
FY23 EMSS Block II Fielding	4	2023	4	2023
FY24 EMSS Block II Fielding	4	2024	4	2024
JFRG II				
CCA	4	2019	4	2019
MS C	1	2020	1	2020
IOC	1	2020	1	2020
FD	3	2020	3	2020
BTI				
Continuous system improvement	1	2019	4	2019

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy											Date: March 2019	
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 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
3099: *Radar System*	192.155	9.520	16.435	13.708	-	13.708	5.651	1.462	1.498	1.528	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

In FY19, Family of Target Acquisition Systems (FTAS) funding transitioned from project 3099 Radar Systems to project 3773 Fire Coordination and Sensors. Realignment of efforts in FY19 and beyond reflects USMC Program Management Office (PMO) reorganization to improve support of USMC Operation Forces.

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. The USMC extended the AN/TPS-59 service life through 2035; therefore, in order to maintain its operational relevance on the battlefield, a number of modernization efforts were initiated in FY17. The Digital Receiver and Exciter (DREX) upgrade will convert the analog receivers and exciters to digital to address Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues, enable spectral agility, reduce noise, reduce false alarms, and enhance Electronic Counter-Countermeasures (ECCM) capability. This effort will include an essential simulation and test environment capability. Post Deployment Software Support (PDSS) funds the DREX software integration merge into the tactical system baseline.

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, and the AN/TSQ-267 Target Processing Set. 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 friendly fire 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 continue to address system issues that arise due to DMSMS items within the FTAS. The USMC assumed the role of Primary Inventory Control Activity (PICA) for the AN/TPQ-49 in FY15 when the Army divested itself from the system. FTAS transitions from Project C3099 to C3773 beginning in FY19.

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.

The overall program decrease of $2.727M is principally due to TPS-59's deferment of certain modernization efforts except for those critical to preventing obsolescence.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: AN/TPS-59: Product Development	2.403	7.736	5.567	0.000	5.567
Articles:	-	-	-	-	-
FY 2019 Plans: - Continue enhanced software development for Tactical Ballistic Missile (TBM) detection. - Continue DREX Engineering Design Model (EDM) Development. ***FY 2020 Base Plans:*** - Initiates the Array Row Transmitter Technical Refresh which will increase radar detection ability, reduce power consumption and address obsolescence. - Initiates Mode 5 Level II updates which will increase capability for command and control of aircraft Identification of Friend or Foe (IFF) systems. - Supports development of Radar Environmental Simulator (RES) Logistics Products such as, technical manuals and training packages. - Continues enhanced software development for post deployment software support efforts TBM detection. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $2.169M from FY19 to FY20 reflects USMC decision to defer all modernization except the IFF Mode 5/S level 1 upgrade and upgrades specifically to prevent system obsolescence.					
Title: AN/TPS-59: Support	2.396	4.275	3.614	0.000	3.614
Articles:	-	-	-	-	-
FY 2019 Plans: - Initiate test and evaluation support for Digital Receiver and Exciter (DREX), and Post Deployment Software Support enhancements. - Continue developmental engineering support for DREX. ***FY 2020 Base Plans:*** - Continues Engineering and Test Support for Digital Receiver Exciter (DREX), and Post Deployment Software Support enhancements. - Initiates Array Row Transmitter Technical Refresh and Mode 5 Level II engineering development efforts. ***FY 2020 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $.661M from FY19 to FY20 reflects USMC decision to defer all modernization except the IFF Mode 5/S level 1 upgrade and upgrades specifically to prevent system obsolescence.					
Title: AN/TPS-59: Test and Evaluation	0.273	1.396	1.236	0.000	1.236
Articles:	-	-	-	-	-
FY 2019 Plans: - Initiate test and evaluation of the Digital Receiver and Exciter (DREX) Engineering Design Module (EDM). ***FY 2020 Base Plans:*** - Completes DREX developmental testing (DT) for successful transition into production. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $0.160M from FY19 to FY20 reflects USMC decision to defer all modernization except the IFF Mode 5/S level 1 upgrade and upgrades specifically to prevent system obsolescence.					
Title: AN/TPS-59: Management Services	0.000	1.900	1.900	0.000	1.900
Articles:	-	-	-	-	-
FY 2019 Plans: - Initiate support from MITRE for enhanced data analysis and engineering modeling of threat profiles to support the tactical ballistic missile software enhancements and current operational threats. ***FY 2020 Base Plans:*** - Continues MITRE Technical Support which provides expertise necessary to support the radar systems, and provide analysis of test data to validate system performance. ***FY 2020 OCO Plans:*** N/A					
Title: FTAS: Product Development	1.180	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- See Project C3773. ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A					
Title: FTAS: Test and Evalution ***Articles:*** ***FY 2019 Plans:*** - See Project C3773. ***FY 2020 Base Plans:*** N/A ***FY 2020 OCO Plans:*** N/A	0.035 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: VWC: Support ***Articles:*** ***FY 2019 Plans:*** - Continue to simulate war games at the VWC in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the IAMD mission area. ***FY 2020 Base Plans:*** - Will continue to simulate war games at the VWC in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the IAMD mission area. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $.147M from FY19 to FY20 supports USMC fair share costs to support VWC efforts.	1.905 -	0.813 -	0.960 -	0.000 -	0.960 -
Title: VWC: Test and Evaluation ***Articles:*** ***FY 2019 Plans:***	1.328 -	0.315 -	0.431 -	0.000 -	0.431 -

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Continue to simulate war games at the VWC in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the IAMD mission area. ***FY 2020 Base Plans:*** - Will continue to simulate war games at the VWC in St. Louis, MO, in order to quantify family of systems performance and how it impacts effectiveness in the IAMD mission area. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $.118M from FY19 to FY20 supports USMC fair share costs to support VWC efforts.					
Accomplishments/Planned Programs Subtotals	9.520	16.435	13.708	0.000	13.708

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• PMC/4650-1: *AN/TPS-59*	9.676	6.694	0.329	-	0.329	5.315	6.469	8.142	0.000	Continuing	Continuing
• PMC/4650-2: *FTAS*	5.135	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	34.276
• PMC/4650-3: *SHORAD (AN/TPS-63)*	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	15.447
• RDTE/C3773: *FTAS*	0.000	1.626	1.629	-	1.629	1.660	1.687	1.721	1.755	0.000	10.078
• PMC/4733: *FTAS*	0.000	2.867	2.943	-	2.943	3.002	3.061	3.122	3.184	Continuing	Continuing

Remarks

FTAS RDTE transitions from Project C3099 to C3773 in FY19.

D. Acquisition Strategy

Long Range Radar (AN/TPS-59) - Due to the proprietary nature of the software, the AN/TPS-59 Program will utilize a sole source contract with the OEM for software and Digital Receiver and Exciter development. The AN/TPS-59 Program will utilize full and open competition to the max extent possible on areas that do not have proprietary restrictions.

Family of Target Acquisition Systems (FTAS) - The Family of Target Acquisition Systems consists of 3 major components: AN/TPQ-46, AN/TPQ-49 and the AN/TSQ-267. Of these 3 systems, the AN/TPQ-46 is due to be replaced by the Ground/Air Task Oriented Radar (G/ATOR) beginning in 2019. Sustainment activities during 2016 and beyond will be limited to maintain the authority to operate (ATO) creditation. Sustainment activities on the AN/TPQ-49 are escalating due to the fact

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3099 / *Radar System*

the US Army divested from the AN/TPQ-49, the USMC has assumed the responsibilities of the primary inventory control activity (PICA). Program Office will conduct an engineering change to the AN/TPQ-49 to provide the operating forces with a mobile, stand-alone configuration. Sustainment activities on the AN/TPQ-46 will begin to escalate due to the US Army divestiture from the AN/TPQ-36. The USMC will assume some sustainment responsibilities for the AN/TPQ-46 until replaced by G/ATOR. Additionally, the AN/TSQ-267 requires hardware updates in order to continue housing the suite of equipment that supports the Target Processing Center (TPC) activities.

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.

E. Performance Metrics

Milestone Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 - DREX EDM Development	SS/CPFF	LMC : SYRACUSE, NY	3.254	0.000		4.008	Dec 2018	3.297	Dec 2019	-		3.297	0.000	10.559	-
AN/TPS-59 - DREX EDM Development Program Management	SS/CPFF	LMC : SYRACUSE, NY	1.409	0.000		0.334	Sep 2019	2.270	Nov 2019	-		2.270	0.000	4.013	-
AN/TPS-59 - Enhanced Software Development	SS/CPFF	LMC : SYRACUSE, NY	1.426	2.403	Aug 2018	3.394	Jul 2019	0.000		-		0.000	0.000	7.223	-
FTAS	MIPR	TYAD : TOBYHANNA, PA	0.593	1.180	Mar 2018	0.000		0.000		-		0.000	0.000	1.773	-
Prior Year Cumulative Funding	Various	VARIOUS : VARIOUS	84.632	0.000		0.000		0.000		-		0.000	0.000	84.632	-
		Subtotal	91.314	3.583		7.736		5.567		-		5.567	0.000	108.200	N/A

Remarks

- Decrease of $2.169M from FY19 to FY20 due to divestment.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 - Government Engineering Support	WR	NSWC : PORT HUENEME, vCA	0.866	0.000		0.615	Nov 2018	0.000		-		0.000	0.000	1.481	-
AN/TPS-59 - GFE for Test Asset	C/CPFF	LMC : SYRACUSE, NY	1.034	0.000		0.770	Jul 2019	0.000		-		0.000	0.000	1.804	-
AN/TPS-59 - Engineering Support	C/FFP	MCSC : QUANTICO, VA	0.000	0.000		2.890	Nov 2018	3.614	Nov 2019	-		3.614	0.000	6.504	-
AN/TPS-59 - Engineering Support	SS/CPFF	LMC : SYRACUSE, NY	0.000	2.396	Jun 2018	0.000		0.000		-		0.000	0.000	2.396	-
VWC	C/CPFF	ONR : ST. LOUIS, MO	19.921	1.905	Feb 2018	0.813	Feb 2019	0.960	Feb 2020	-		0.960	Continuing	Continuing	Continuing
Prior Year Cumulative Funding	Various	VARIOUS : VARIOUS	48.391	0.000		0.000		0.000		-		0.000	0.000	48.391	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 3099 / *Radar System*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	70.212	4.301		5.088		4.574		-		4.574	Continuing	Continuing	N/A

Remarks

- Decrease of $3.614M from FY19 to FY20 supports due to divestment.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 - Test & Evaluation	C/CPFF	NSWC, Corona : CORONA, CA	0.000	0.273	Aug 2018	1.396	Aug 2019	0.419	Aug 2020	-		0.419	0.000	2.088	-
AN/TPS-59 - GFE for Test Asset	C/CPFF	LMC : SYRACUSE, NY	0.000	0.000		0.000		0.817	Jun 2020	-		0.817	0.000	0.817	-
FTAS	WR	MCTSSA : SAN DIEGO, CA	0.680	0.035	Feb 2018	0.000		0.000		-		0.000	0.000	0.715	-
VWC	C/CPFF	ONR : ST. LOUIS, MO	0.000	1.328	May 2018	0.315	May 2019	0.431	May 2020	-		0.431	0.000	2.074	-
Prior Year Cumulative Funding	Various	VARIOUS : VARIOUS	3.968	0.000		0.000		0.000		-		0.000	0.000	3.968	-
		Subtotal	4.648	1.636		1.711		1.667		-		1.667	0.000	9.662	N/A

Remarks

- Decrease of $0.015M from FY19 to FY20 due to divestment.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 Engineering Support	MIPR	MITRE : BEDFORD, MA	0.000	0.000		1.900	Dec 2018	1.900	Oct 2019	-		1.900	0.000	3.800	-
Prior Year Cumulative Funding	Various	VARIOUS : VARIOUS	25.981	0.000		0.000		0.000		-		0.000	0.000	25.981	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3099 / *Radar System*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			25.981	0.000		1.900		1.900		-		1.900	0.000	29.781	N/A

Remarks

- Decrease of $1.665M from FY19 to FY20 due to divestment.

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	192.155	9.520		16.435		13.708		-		13.708	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3099 / *Radar System*

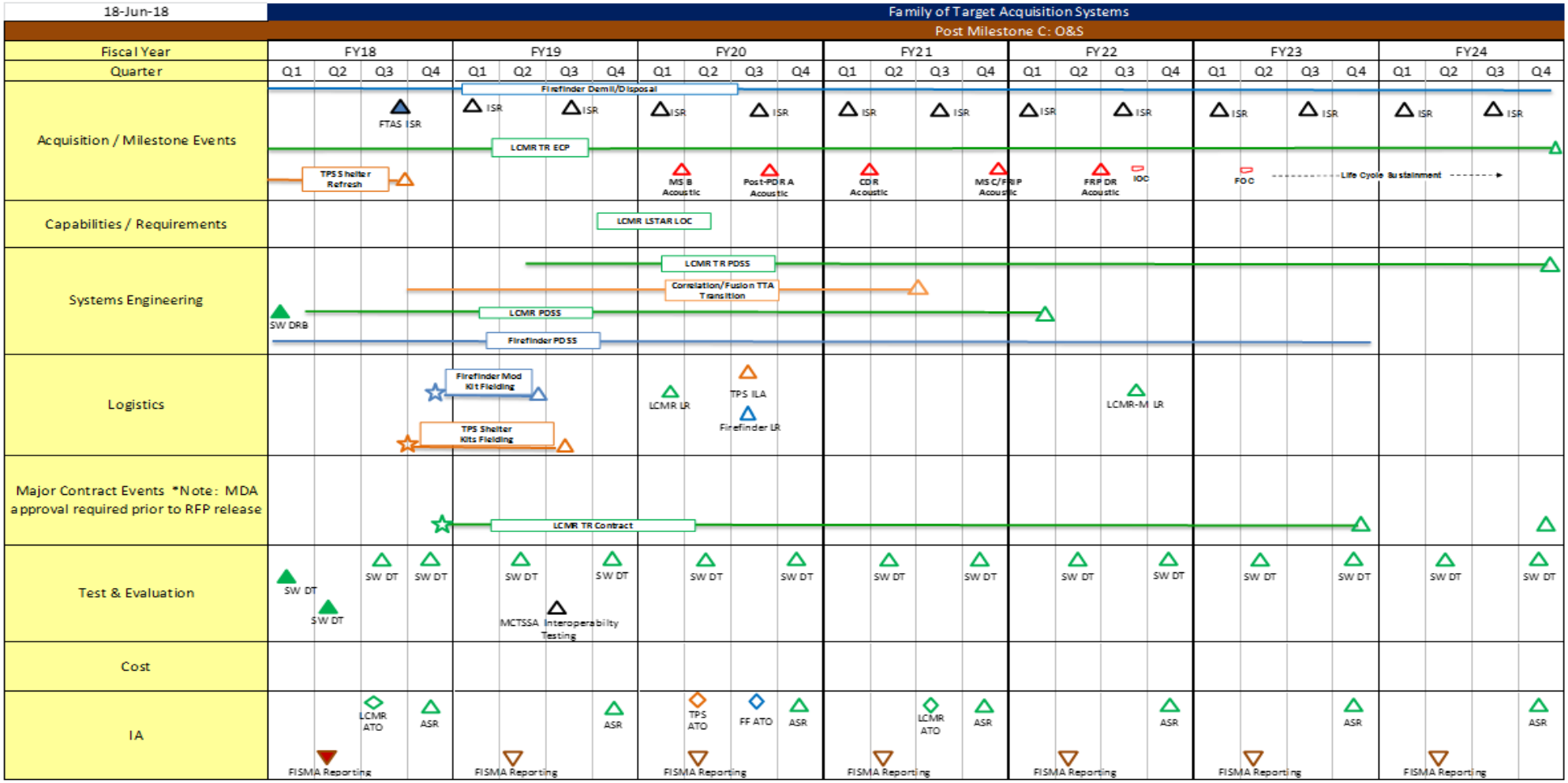


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3099 / *Radar System*

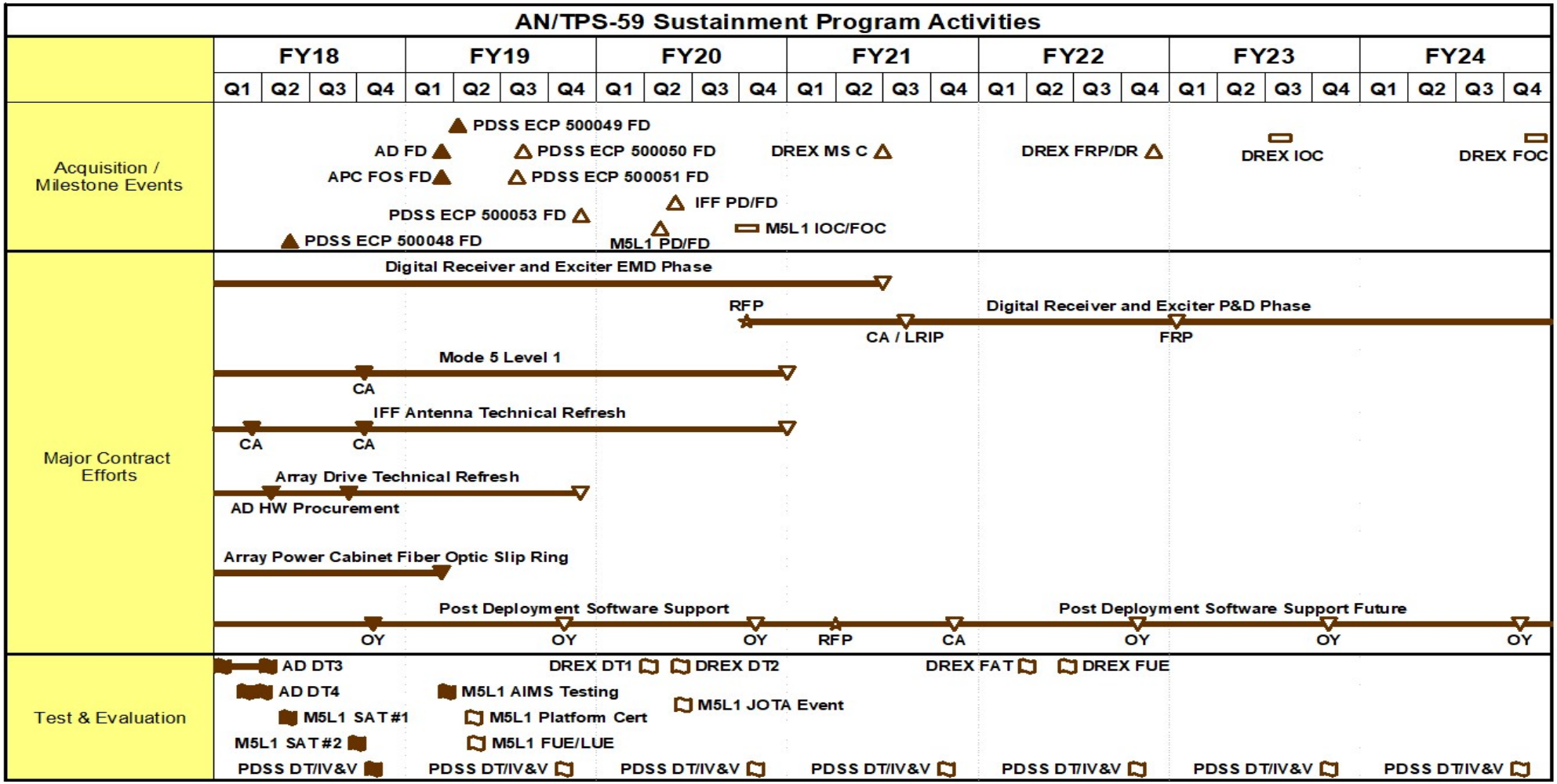


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3099 / *Radar System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3099				
AN/TPS-59 IFF Contract Award	1	2018	1	2018
AN/TPS-59 PDSS Inc 2 Fielding Decision	2	2018	2	2018
AN/TPS-59 IFF Fielding Decision	1	2019	1	2019
AN/TPS-59 PDSS ECP Fielding Decision	1	2019	1	2019
AN/TPS-59 PDSS Option Year Award	4	2019	4	2019
AN/TPS-59 PDSS Final Option Year Award	4	2020	4	2020
AN/TPS-59 DREX DT1	1	2020	1	2020
AN/TPS-59 M5L1 JOTA Test Event	2	2020	2	2020
FTAS - TPS Shelter Refresh FOC	3	2018	3	2018

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
3772: *Information Related Capabilities (IRC)*	0.000	0.000	4.188	4.791	-	4.791	3.310	2.002	2.261	2.306	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Beginning in FY19, Marine Civil Information Management System (MARCIMS), Public Affairs System (PAS) and Military Information Support Operations (MISO) funding has been realigned from project 2277, System Engineering & Integration. Realignment of efforts to new projects in FY19 and beyond reflects USMC Program Management Office (PMO) reorganization to improve support of USMC OPFOR.

A. Mission Description and Budget Item Justification

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. This program transitions from C2277 to C3772 in FY19.

Public Affairs System (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 and evaluate solutions to modernize the Public Affairs Still Acquisition System into a single handheld device with the capability to acquire, edit and transmit still and video imagery and engage publics via traditional and social media. This program transitioned from C2277 to C3772 in FY19.

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 (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. 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 critical to the success of the MAGTF mission, enabling commanders to shape the information environment, counter enemy propaganda, misinformation, disinformation, and adversarial narratives. The Signature Management (SIGMAN) capability will support MAGTF Operations with a baseline capability to include Own-force signature monitoring and assessment, Electromagnetic signature masking and projection, and physical decoys. This program transitioned from C2277 to C3772 in FY19.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Public Affairs System (PAS): Product Development	0.000	0.092	0.390	0.000	0.390
Articles:	-	-	-	-	-
Description: Program transitioned from Project 2277 to 3772 in FY19. ***FY 2019 Plans:*** -Continue the research and evaluation of solutions to modernize the Public Affairs Live Media Engagement System (PALMES) with the capability to transmit imagery and engage publics via traditional and social media via Military Satellite Communications (MILSATCOM). These actions will include the evaluation of device solutions and research of information assurance requirements to accredit the Public Affairs transmission capability. ***FY 2020 Base Plans:*** - Initiate procurement of Public Affairs Live Media Engagement System (PALMES) Next Generation test asset. - Procure test articles in support of the next generation of the Public Affairs Tablet (PAT). - Continued research and evaluation of PALMES in support of modernization and incorporation of the capability to transmit imagery and engage publics via traditional and social media via Military Satellite Communications (MILSATCOM). ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $0.298M from FY19 to FY20 reflects procurement of PALMES and PAT test assets in support of modernization efforts.					
Title: Military Information Support Operations (MISO): Product Development	0.000	1.080	2.062	0.000	2.062
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. FY18 initiates product development of the Fly-Away Broadcast System (FABS) in preparation for a MS C decision. ***FY 2019 Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
- Continue engineering and manufacturing development of the Fly-Away Broadcast System (FABS). - Initiate research and development efforts for Signature Management (SIGMAN) and tactical deception capabilities. ***FY 2020 Base Plans:*** - Initiate Air integration efforts for FABS - Continue research and development efforts for Signature Management (SIGMAN) and tactical deception capabilities. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $0.982M from FY19 to FY20 is due to the initiation of air integration efforts for FABS.					
Title: MISO: Test and Evaluation	0.000	3.016	1.900	0.000	1.900
Articles:	-	3	-	-	-
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. FY18 initiates product development of the Fly-Away Broadcast System (FABS) in preparation for a MS C decision. ***FY 2019 Plans:*** - Initiate test and evaluation activities for Fly-Away Broadcast System (FABS). - Initiate procurement of 3 test assets (Light, Medium, Heavy) ***FY 2020 Base Plans:*** - Continue research and development efforts of the Fly-Away Broadcast System in support of production verification and user evaluation. - Initiate research and development of Signature Management (SIGMAN) and tactical deception capabilities ***FY 2020 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $1.116M from FY19 reflects completion of FABS testing.					
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 2019 Plans:*** N/A ***FY 2020 Base Plans:*** - Continue development of MARCIMS 2.0 - Conduct test and identification of the next generation of MARCIMS mobile devices ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase of $0.439M from FY19 to FY20 reflects MARCIMS every-other-year test schedule in support of system refresh.	0.000 -	0.000 -	0.439 -	0.000 -	0.439 -
Accomplishments/Planned Programs Subtotals	0.000	4.188	4.791	0.000	4.791

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• PMC/4620AA: *MARCIMS*	0.000	0.296	0.000	-	0.000	0.302	0.000	0.308	0.314	Continuing	Continuing
• PMC/4620BB: *PAS*	3.482	0.917	0.691	-	0.691	0.710	0.722	0.736	0.751	Continuing	Continuing
• PMC/4620CC: *MISO*	0.000	2.976	8.364	-	8.364	9.924	9.938	7.853	8.010	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost

Remarks

MARCIMS, PAS, MISO transition from 2277 to 3772 in FY19.

D. Acquisition Strategy

MARCIMS will continue to support and sustain the current baseline system, while employing incremental changes to ensure that the system not only meets current requirements per the Letter of Clarification, but also allows for a more user friendly system. MARCIMS plans to begin development of MARCIMS 2.0 in a partnership with the Office of Naval Research (ONR), while simultaneously maintaining the current and approved version of the system.

Public Affairs System 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 a production design of the FABS, validate production requirements, manage FABS technical risk and define system support requirements in FY18, leading to a MS B decision in Q2 FY18, MS C / LRIP decision in Q1 FY20, and an FRP decision in Q4 FY20.

E. Performance Metrics

Milestone Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
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 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MISO	WR	JHU-APL : Laurel, MD	0.000	0.000		1.080	Apr 2019	2.062	Apr 2020	-		2.062	Continuing	Continuing	Continuing
PAS	WR	SSC-PAC : San Diego, CA	0.000	0.000		0.092	Mar 2019	0.390	Mar 2020	-		0.390	Continuing	Continuing	Continuing
MARCIMS	WR	NSWC-IH : Indian Head, MD	0.000	0.000		0.000		0.439	Nov 2019	-		0.439	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		1.172		2.891		-		2.891	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MISO	WR	NAVSEA : Laurel MD	0.000	0.000		3.016	Feb 2019	1.900	Feb 2020	-		1.900	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		3.016		1.900		-		1.900	Continuing	Continuing	N/A

Remarks

MISO includes procurement of 3 test assets and test and evaluation support in FY19.

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		4.188		4.791		-		4.791	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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)*

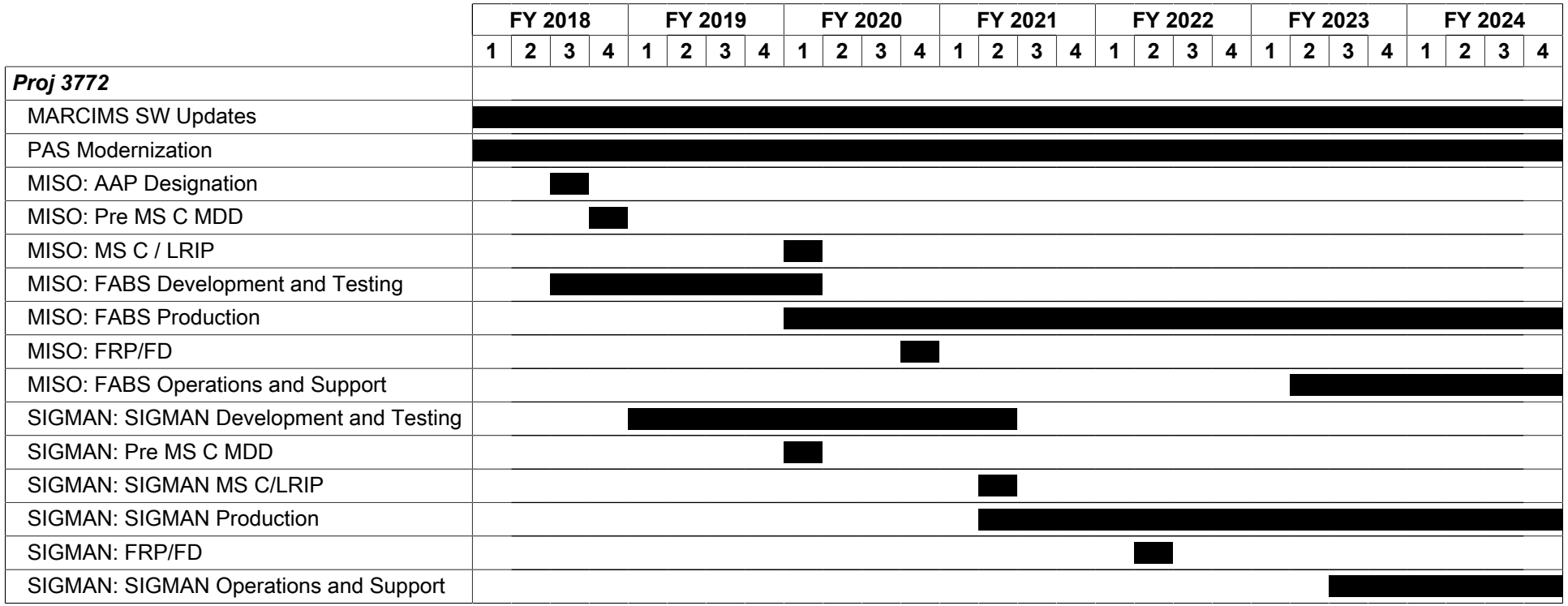


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3772 / *Information Related Capabilities (IRC)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3772				
MARCIMS SW Updates	1	2018	4	2024
PAS Modernization	1	2018	4	2024
MISO: AAP Designation	3	2018	3	2018
MISO: Pre MS C MDD	4	2018	4	2018
MISO: MS C / LRIP	1	2020	1	2020
MISO: FABS Development and Testing	3	2018	1	2020
MISO: FABS Production	1	2020	4	2024
MISO: FRP/FD	4	2020	4	2020
MISO: FABS Operations and Support	2	2023	4	2024
SIGMAN: SIGMAN Development and Testing	1	2019	2	2021
SIGMAN: Pre MS C MDD	1	2020	1	2020
SIGMAN: SIGMAN MS C/LRIP	2	2021	2	2021
SIGMAN: SIGMAN Production	2	2021	4	2024
SIGMAN: FRP/FD	2	2022	2	2022
SIGMAN: SIGMAN Operations and Support	3	2023	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
3773: *Fire Coordination and Sensors*	0.000	0.000	7.910	7.801	-	7.801	7.989	8.155	8.321	8.487	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Beginning in FY19, AFATDS, THS, and FTAS funding has been realigned from Projects 2270, Exp Indirect Fire Gen Supt Wpn Sys and 3099, Radar System, to support USMC Program Management Office (PMO) reorganization.

A. Mission Description and Budget Item Justification

Project 3773 funds the development of Fire Support Coordination Systems and Sensors. These systems digitally connect forward observers and sensors to artillery weapons. The also provide digital tools to develop fire support missions and coordination ground and fire support.

Advanced Field Artillery Tactical Data Family of Systems (AFATDS FoS) - AFATDS FoS consists of three programs, AFATDS, Back Up Computer System (BUCS) and Mobile Tactical Shelter (MTS). The AFATDS automates the fire planning, tactical fire direction, and fire support coordination required to support maneuver from the sea and subsequent operations ashore. AFATDS integrates all supporting arms assets within the Marine Air Ground Task Force (MAGTF) such as mortars, cannon artillery, rockets and missiles, close air support, and naval surface fire support systems. BUCS is a hand-held computer system designed to provide a backup to the AFATDS in computing ballistic firing solutions, as well as provide survey and Meteorological functions in support of artillery. Additionally BUCS is the primary ballistic firing solution system during Ship To Objective Maneuver (STOM). The MTS is a Lightweight Multi-purpose Shelter mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV) which protects both the AFATDS and the BUCS from the environment. The MTS enables rapid emplacement and displacement of fire support elements and provides communications on the move.

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, Ground Counter Fire Sensor (GCFS), and the AN/TSQ-267 Target Processing Set. 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 friendly fire 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 continue to address system issues that arise due to Diminishing Manufacturing Sources and Material Shortage (DMSMS) items within the FTAS. The USMC assumed the role of Primary Inventory Control Activity (PICA) for the AN/TPQ-49 in FY15 when the Army divested itself from the system. The AN/TPQ-46 is being phased out through FY25 and no RDT&E funds are planned in FY19 and out.

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

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

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 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).

The overall decrease of $0.109M is principally due to the completion of AFATDS interoperability testing with their systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: FTAS: Product Development	0.000	1.246	1.629	0.000	1.629
Articles:	-	-	-	-	-
FY 2019 Plans: - Initiated development of Lightweight Counter Mortar Radar (LCMR) tech refresh system.					
FY 2020 Base Plans: - Continue development of Lightweight Counter Mortar Radar (LCMR) tech refresh system. - Continue development of GCFS replacement systems.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: Increase of $0.383M from FY19 to FY20 is due to increased scope of Lightweight Counter Mortar Radar (LCMR) tech refresh system development.					
Title: FTAS: Test and Evalution	0.000	0.380	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: - Completed interoperability testing for the Family of Target Acquisition Systems (FTAS) integration within the Marine Air-Ground Task Force (MAGTF).					
FY 2020 Base Plans: N/A					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Decrease of $0.380M in FY20 is due to interoperability testing being completed in FY19.					
Title: AFATDS: Software Development and Integration	0.000	4.456	5.013	0.000	5.013
Articles:	-	-	-	-	-
FY 2019 Plans: - Completed testing and evaluation of software version 6.8.1.1 P2. - Continued development of AFATDS software version 7.0. - Initiated development of the next generation Back-Up Computer System (BUCS). - Initiated development of AFATDS software version 6.8.1.2.					
FY 2020 Base Plans: - Continue development of AFATDS software version 7.0. - Continue development of the next generation Back-Up Computer System (BUCS). - Continue development of AFATDS software version 6.8.1.2. - Initiate test and evaluation of software version 7.0. - Initiate the development of AFATDS 7.0.1.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: - Increase of $0.557M from FY19 to FY20 due to initiation of development of AFATDS 7.0.1.					
Title: AFATDS: Test and Evaluation	0.000	0.500	0.100	0.000	0.100
Articles:	-	-	-	-	-
FY 2019 Plans: - Continued interoperability testing for AFATDS 6.8.1.1 P2 and BUCS software between all required Joint C2 and Fires systems.					
FY 2020 Base Plans: - Complete interoperability testing for AFATDS 6.8.1.1 P2 and BUCS software between all required Joint C2 and Fires systems. - Initiate interoperability testing for AFATDS 6.8.1.2 software between all required Joint C2 and Fires systems.					
FY 2020 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $0.400M from FY19 to FY20 is due to the completion of interoperability testing for AFATDS 6.8.1.1 P2 and BUCS.					
Title: AFATDS: Management Services ***Articles:*** ***FY 2019 Plans:*** - Continued to provide Engineering Support personnel and travel. ***FY 2020 Base Plans:*** - Continue to provide Engineering Support personnel and travel. ***FY 2020 OCO Plans:*** N/A	0.000 -	0.650 -	0.650 -	0.000 -	0.650 -
Title: THS: Product Development ***Articles:*** ***FY 2019 Plans:*** - Continue development of THS V2 software to integrate digital interoperability with Marine Corps and joint aviation platforms and initiate development of a software modem. ***FY 2020 Base Plans:*** - Completion of software modem and continued development of software to insure digital interoperability with close air support (CAS) platforms. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease of $.269M is due to completion of software modem development.	0.000 -	0.678 -	0.409 -	0.000 -	0.409 -
Accomplishments/Planned Programs Subtotals	0.000	7.910	7.801	0.000	7.801

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• PMC/473300: *Family of Target Acq Systems (FTAS)*	0.000	2.867	2.943	-	2.943	3.002	3.061	3.122	3.184	Continuing	Continuing
• PMC/473301: *Advanced Field Artillery Tactical Data Family of Systems (AFATDS FoS)*	0.000	12.521	12.852	-	12.852	15.531	15.908	16.245	16.570	Continuing	Continuing
• RDTE/0206313M/2270: *Advanced Field Artillery Tactical Data Family of Systems (AFATDS FoS)*	4.558	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	7.672
• RDTE/3099: *Family of Target Acq Systems (FTAS)*	1.215	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.712
• PMC/463100: *Target Handoff System (THS)*	17.985	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	17.985
• PMC/47330: *Target Handoff System (THS)*	0.000	23.983	2.439	-	2.439	2.487	2.537	2.588	2.640	Continuing	Continuing
• PMC/4631: *Advanced Field Artillery Tactical Data Family of Systems (AFATDS FoS)*	10.199	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• RDTE/0206313M/227000: *Target Handoff System (THS)*	1.629	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.629
• PMC/465000: *Family of Target Acq Systems (FTAS)*	5.135	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.135

Remarks

D. Acquisition Strategy

Advanced Field Artillery Tactical Data Family of Systems (AFATDS FoS) - AFATDS is managed through Army CECOM, Aberdeen Proving Ground, MD. R&D efforts for the next AFATDS version will be a combined effort between the software developer, the Army PM, and the USMC for software enhancements through DISA. Current software enhancements are performed at Army, Ft. Sill, OK.

Family of Target Acquisition Systems (FTAS) - The Family of Target Acquisition Systems consists of 4 major components: AN/TPQ-46, AN/TPQ-49, Ground Counter Fire Sensor (GCFS), and the AN/TSQ-267. Of these 4 systems, the AN/TPQ-46 is due to be replaced by the Ground/Air Task Oriented Radar (G/ATOR) beginning in 2019. Activities during 2016 and beyond will be limited to maintain the authority to operate (ATO) accreditation. USMC activities on the AN/TPQ-49 are escalating due to the fact the US Army divested from the AN/TPQ-49, the USMC has assumed the responsibilities of the primary inventory control activity (PICA). Program Office

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
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*

will conduct an engineering change to the AN/TPQ-49 to provide the operating forces with a mobile, stand-alone configuration. The program office will transition the improved Acoustic Sensor capability from the Science and Technology (S&T) phase into the acquisition cycle and continue development by exploiting recent technology improvements. The improved acoustic sensor will be capable of transmitting digital information via JVMF to AFATDS in support of artillery and counter fire operations. Additionally, the AN/TSQ-267 requires hardware updates in order to continue housing the suite of equipment that supports the Target Processing Center (TPC) activities. GCFS procurement will consist of multiple contract awards with USMC as system integrator.

THS: The acquisition of components (software/hardware) for the THS initiative will maximize the use of existing COTS, Government-Off-The-Shelf (GOTS), Non-Developmental Item (NDI), and Government Furnished Equipment (GFE). Software is transitioning to a government owned baseline. Software must maintain compatibility with five Programs of Record (POR) and seven Operational Flight Programs (OFP). Equipment is purchased from multiple vendors with AMRDEC acting as the lead integrator for the UDMC.

E. Performance Metrics

Milestone Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FTAS	C/FFP	AMRDEC : Huntsville, AL	0.000	0.000		1.246	Feb 2019	0.550	Feb 2020	-		0.550	0.000	1.796	-
FTAS	MIPR	TYAD : Tobyhanna, PA	0.000	0.000		0.000		0.300	Nov 2019	-		0.300	0.000	0.300	-
FTAS	WR	NSWC DD : Dahlgren, VA	0.000	0.000		0.000		0.450	Nov 2019	-		0.450	0.000	0.450	-
FTAS	C/CPFF	SSC LANT : Charleston, SC	0.000	0.000		0.000		0.329	Feb 2020	-		0.329	0.000	0.329	-
THS	MIPR	Army : Huntsville, AL	0.000	0.000		0.678	Jan 2019	0.409	Jan 2020	-		0.409	Continuing	Continuing	Continuing
AFATDS	MIPR	DISA : Belleville, IL	0.000	0.000		4.456	Feb 2019	2.547	Feb 2020	-		2.547	0.000	7.003	-
AFATDS	MIPR	FSED : Ft. Sill, OK	0.000	0.000		0.000		1.800	Jan 2020	-		1.800	0.000	1.800	-
AFATDS	MIPR	ARDEC : Picatinny Arsenal, NJ	0.000	0.000		0.000		0.305	Mar 2020	-		0.305	0.000	0.305	-
AFATDS	C/FFP	CECOM/MITRE : Ft. Monmouth, NJ	0.000	0.000		0.000		0.361	Dec 2019	-		0.361	0.000	0.361	-
		Subtotal	0.000	0.000		6.380		7.051		-		7.051	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FTAS	WR	MCTSSA : Camp Pendleton, CA	0.000	0.000		0.380	Feb 2019	0.000		-		0.000	0.000	0.380	-
AFATDS	C/FFP	MCTSSA : Camp Pendleton, CA	0.000	0.000		0.500	Feb 2019	0.100	Feb 2020	-		0.100	0.000	0.600	-
		Subtotal	0.000	0.000		0.880		0.100		-		0.100	0.000	0.980	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AFATDS	C/CPFF	CECOM/MITRE : Ft. Monmouth, NJ	0.000	0.000		0.650	Nov 2018	0.650	Dec 2019	-		0.650	0.000	1.300	-
		Subtotal	0.000	0.000		0.650		0.650		-		0.650	0.000	1.300	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		7.910		7.801		-		7.801	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
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*

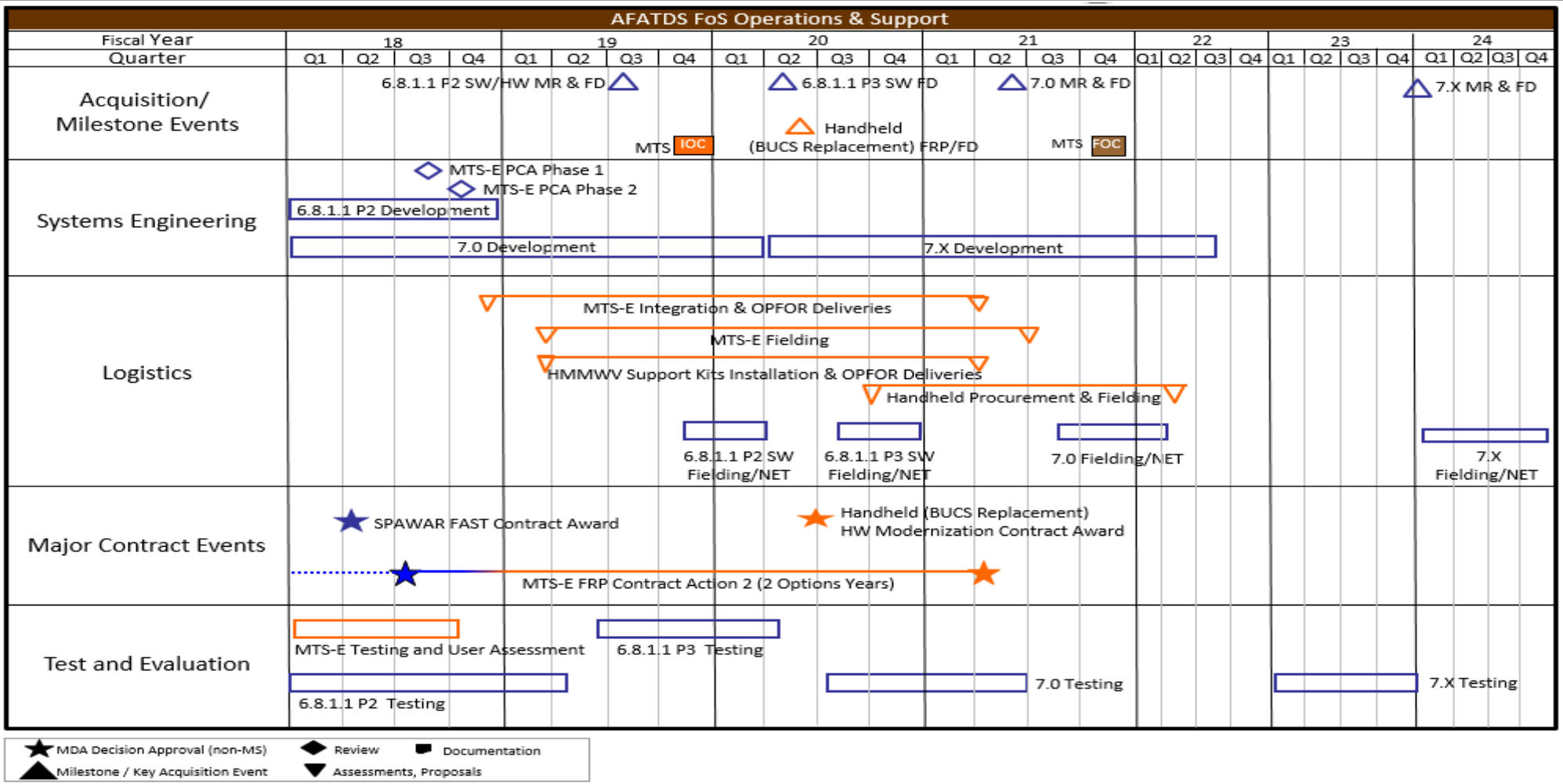


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3773 / *Fire Coordination and Sensors*

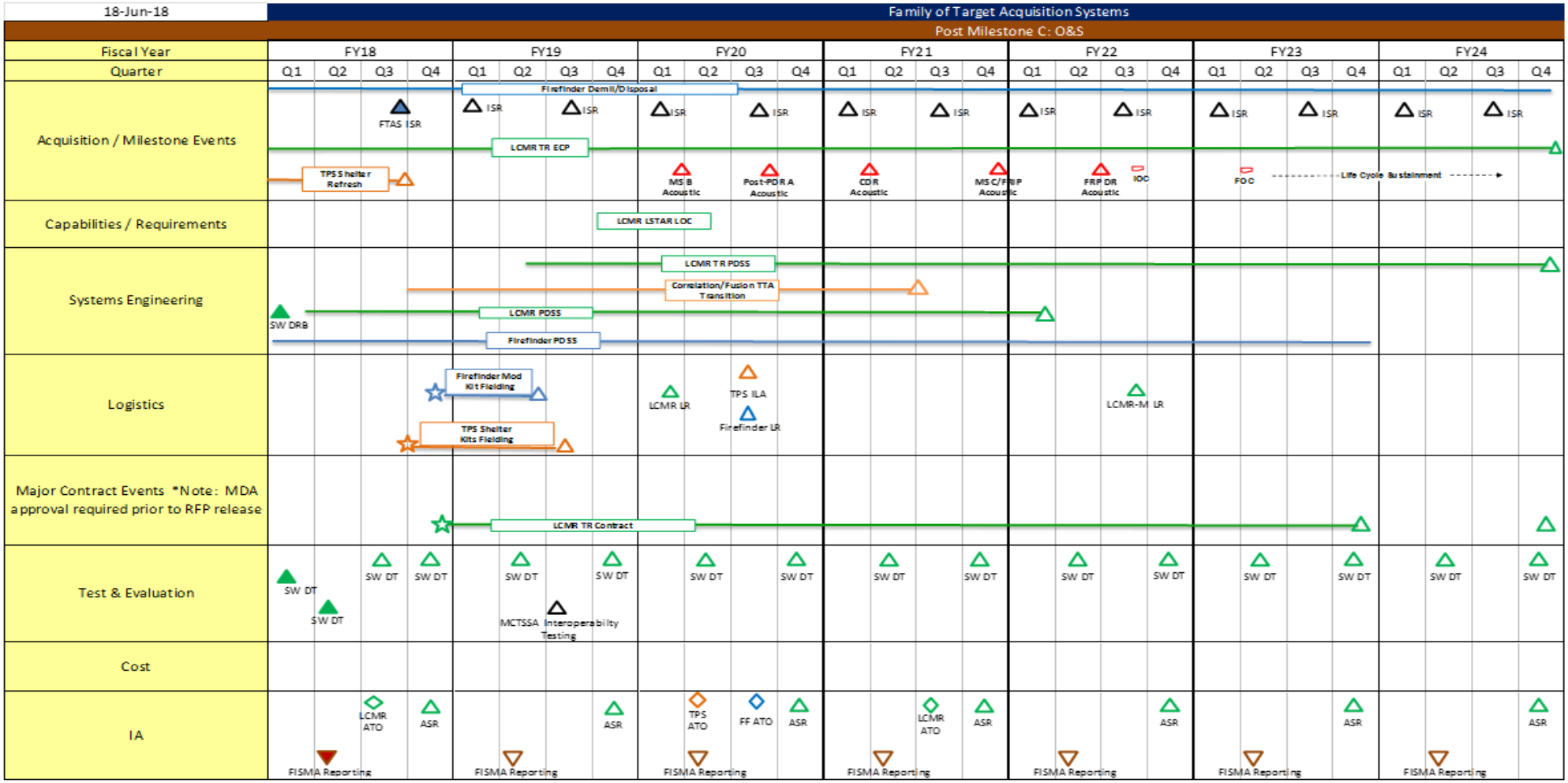


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3773 / *Fire Coordination and Sensors*

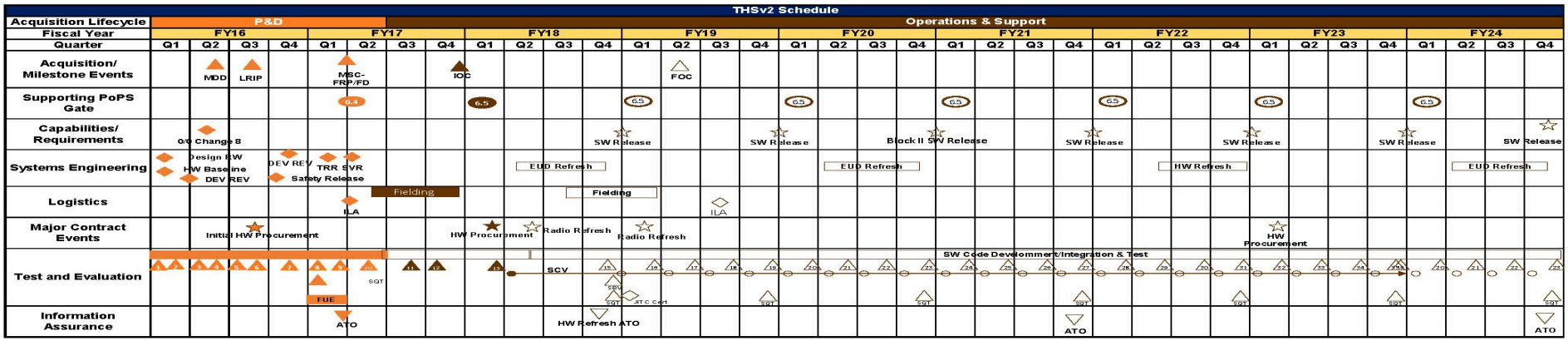


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 3773 / *Fire Coordination and Sensors*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3773				
AFATDS 7.0 Software Development	1	2018	2	2020
AFATDS 7.0 Testing	3	2020	3	2021
FTAS - Data Fusion Tech Transition	3	2021	3	2021

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
9999: *Congressional Adds*	29.961	51.959	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	81.920
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Long Range Radar (AN/TPS-59) $12.554M - 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. The USMC extended the AN/TPS-59 service life through 2035, therefore, in order to maintain operational relevance on the battlefield, a number of modernization efforts are being initiated. The Digital Receiver and Exciter (DREX) upgrade will convert the analog receivers and exciters to digital to address Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues, enable spectral agility, reduce noise, reduce false alarms, and enhance electronic counter-countermeasures (ECCM) capability. This effort will include an essential simulation and test environment capability.

Ground Based Air Defense- Future Weapons Systems (GBAD FWS) $39.405M- In response to urgent warfighting requirements for counter unmanned aircraft system (C-UAS) capability, the Marine Corps has developed and delivered multiple C-UAS systems supporting both conventional and special operations Marine Corps forces. The Marine Corps will transition to a new Ground based Air Defense (GBAD) Program of Record called the Marine Air Defense Integrated System (MADIS) with an Initial Operational Capability of FY21. The MADIS, which will be based on the Joint Light Tactical Vehicle (JLTV) relies on technological and integration advancements of near-term C-UAS efforts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019
Congressional Add: Radar System Development	12.554	0.000
FY 2018 Accomplishments: -Initiated RES EDM Development and Production. -Initiated DREX Software Development and Test Environment -Initiated DREX DT 1 -Continued MITRE Engineering Support -Continue DREX Program Support ***FY 2019 Plans:*** N/A		
Congressional Add: FOB Protection - Counter-UAS	39.405	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 9999 / *Congressional Adds*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019
FY 2018 Accomplishments: -Congressional Add funding purchased and integrated Counter-UAS Prototype Components for testing, assessing, and deploying the following platforms; the Expeditionary-Marine Air Defense Integrated System (E-MADIS), MADIS Inc 0.1-MATV and MADIS Inc 1 - JLTV in support of UUNS #15205UA, JUONS #CC-0558 and JEONS #ST-0008. Additionally, these efforts mitigate risk for the successful development and fielding of the various MADIS platforms. ***FY 2019 Plans:*** N/A		
Congressional Adds Subtotals	51.959	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• PMC/4650: *AN/TPS-59 Mods*	9.676	6.694	0.329	-	0.329	5.315	6.469	8.142	0.000	Continuing	Continuing
• RDTE/0206313M/3099: *AN/TPS-59 Mods*	5.071	15.307	12.317	-	12.317	4.218	0.000	0.000	0.000	Continuing	Continuing
• PMC/3006: *GBAD*	10.026	18.334	175.998	-	175.998	267.976	238.980	233.442	238.127	21.675	1,316.775
• RDTEN/0206313M/2278: *GBAD*	28.794	89.735	49.535	15.000	64.535	21.523	12.351	26.052	26.570	Continuing	Continuing

Remarks

D. Acquisition Strategy

Long Range Radar (AN/TPS-59) - Due to the proprietary nature of the software, the AN/TPS-59 Program will utilize a sole source contract with the OEM for software and Digital Receiver and Exciter (DREX) development. The AN/TPS-59 program will utilize full and open competition to the max extent possible on areas that do not have proprietary restrictions.

Ground Based Air Defense- Future Weapons Systems (GBAD FWS)-The GBAD FWS capability will be developed in three increments. Increment 1 modernizes the existing GBAD legacy systems (A-MANPADS) by mounting a mix of legacy and technologically mature capabilities (from UUNS achievements) onto Joint Light Tactical Vehicles (JLTV), mitigating the risk of attacks from UAS and FW/RW aircraft, while maintaining pace with maneuver forces. Increment 2 focuses on significant extended range to the Increment 1 system as well as kinetic and non kinetic capabilities. Increment 3 will be a new system designed to defend fixed/semi-fixed assets against Cruise Missiles (CM) and Rockets, Artillery, and Mortars (RAM) threats. GBAD FWS Increment 1 is called Marine Air Defense Integrated System (MADIS) which has been designated an ACAT II program. MADIS entered development phase mid FY18 and culminates development with Milestone C 1QFY20. Initial MADIS integration and development will be accomplished by Naval Surface Warfare Centers Crane and Dahlgren. An IOC of 4QFY21 and FOC of 4QFY25 have been established. To support a Material Support Decision, a concept demonstration of a CM defense system has been planned for 4QFY19. Initial design and integration reviews for this

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 9999 / *Congressional Adds*

CM system are underway at this time. A 4QFY19 Accelerated Acquisition decision from Deputy Assistant Secretary of the Navy (DASN) Expeditionary & Logistics Management (E&LM) is planned to place Inc 3 Medium Range Intercept under the Middle Tier Acquisition guidelines.

E. Performance Metrics

Milestone Reviews
OSD Financial Benchmarks
Integrated Master Schedule
Technical Performance Measures

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206313M / *Marine Corps Comms Systems*	Project (Number/Name) 9999 / *Congressional Adds*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 DREX RES EDM Production and Development	SS/CPFF	LMC : Syracuse, NY	0.000	5.561	Aug 2018	0.000		0.000		-		0.000	0.000	5.561	-
GBAD FWS-GFE	MIPR	DLA : Philadelphia, PA	0.000	23.109	Jul 2018	0.000		0.000		-		0.000	0.000	23.109	-
GBAD FWS-GFE	MIPR	PD CRAM : Redstone Arsenal	0.000	12.892	Jul 2018	0.000		0.000		-		0.000	0.000	12.892	-
GBAD FWS Integration	MIPR	NSWC : Crane/SAIC	0.000	1.181	Oct 2018	0.000		0.000		-		0.000	0.000	1.181	-
Prior Year Cumulative Funding	Various	Various : Various	13.184	0.000		0.000		0.000		-		0.000	0.000	13.184	-
		Subtotal	13.184	42.743		0.000		0.000		-		0.000	0.000	55.927	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 Program Support	C/FFP	AI : Stafford, VA	0.000	0.227	Nov 2018	0.000		0.000		-		0.000	0.000	0.227	-
GBAD FWS C2 Support	MIPR	PD CRAM : Redstone Arsenal	0.000	0.999	Oct 2018	0.000		0.000		-		0.000	0.000	0.999	-
GBAD FWS Eng Support	MIPR	NSWC : Crane/ SAIC	0.000	1.224	Jul 2018	0.000		0.000		-		0.000	0.000	1.224	-
Prior Year Cumulative Funding	Various	Various : Various	8.768	0.000		0.000		0.000		-		0.000	0.000	8.768	-
		Subtotal	8.768	2.450		0.000		0.000		-		0.000	0.000	11.218	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 DREX DT1	SS/CPFF	LMC : Syracuse, NY	0.000	2.001	Aug 2018	0.000		0.000		-		0.000	0.000	2.001	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 9999 / *Congressional Adds*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 DREX SW Development and Test Environment	SS/CPFF	LMC : Syracuse, NY	0.000	2.913	Aug 2018	0.000		0.000		-		0.000	0.000	2.913	-
Prior Year Cumulative Funding	Various	Various : Various	3.713	0.000		0.000		0.000		-		0.000	0.000	3.713	-
		Subtotal	3.713	4.914		0.000		0.000		-		0.000	0.000	8.627	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/TPS-59 Engineering Support	SS/FFP	MITRE : Bedford, MA	4.296	1.852	Sep 2018	0.000		0.000		-		0.000	0.000	6.148	-
		Subtotal	4.296	1.852		0.000		0.000		-		0.000	0.000	6.148	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	29.961	51.959		0.000		0.000		-		0.000	0.000	81.920	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 9999 / *Congressional Adds*

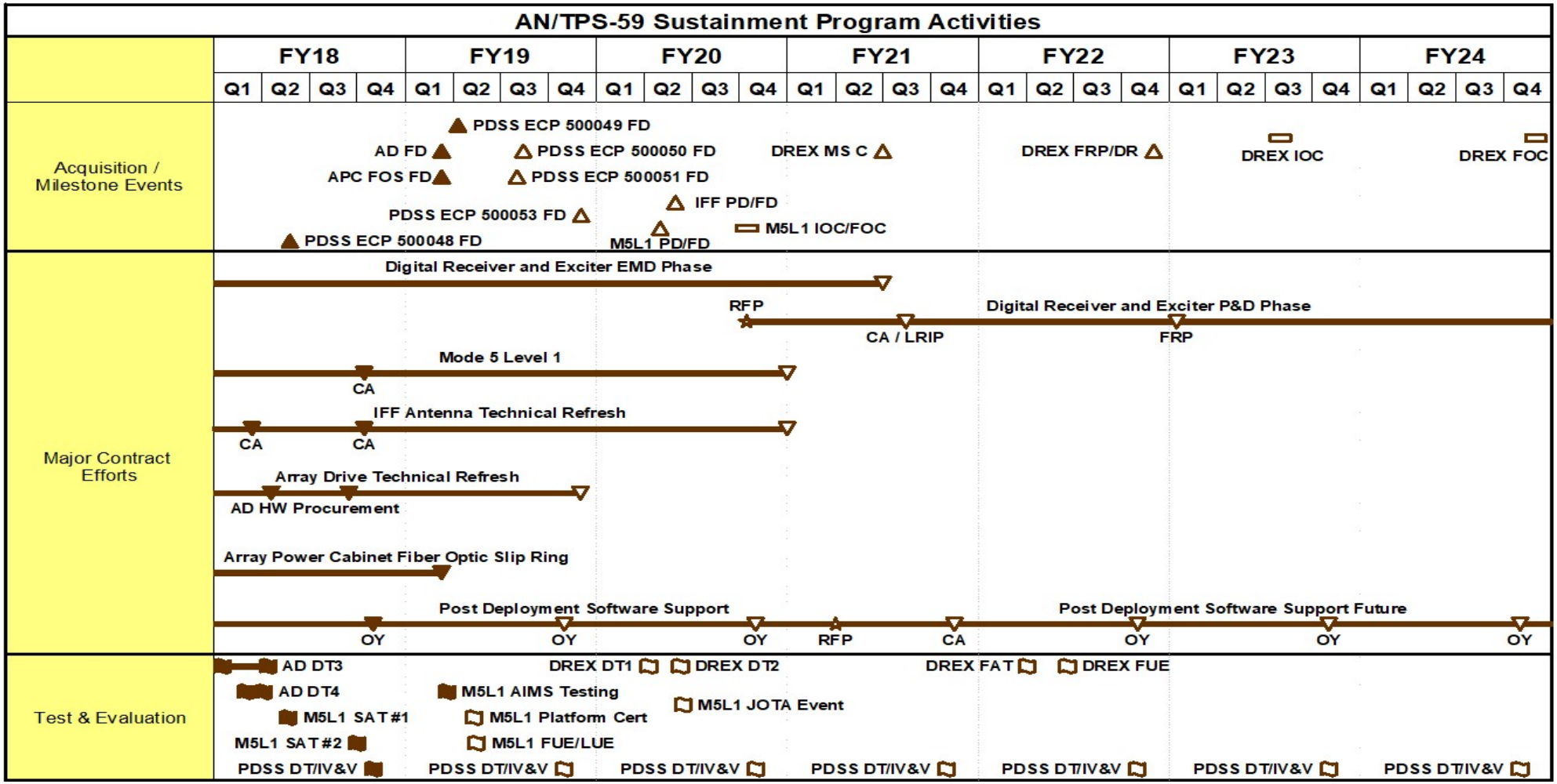


Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 9999 / *Congressional Adds*

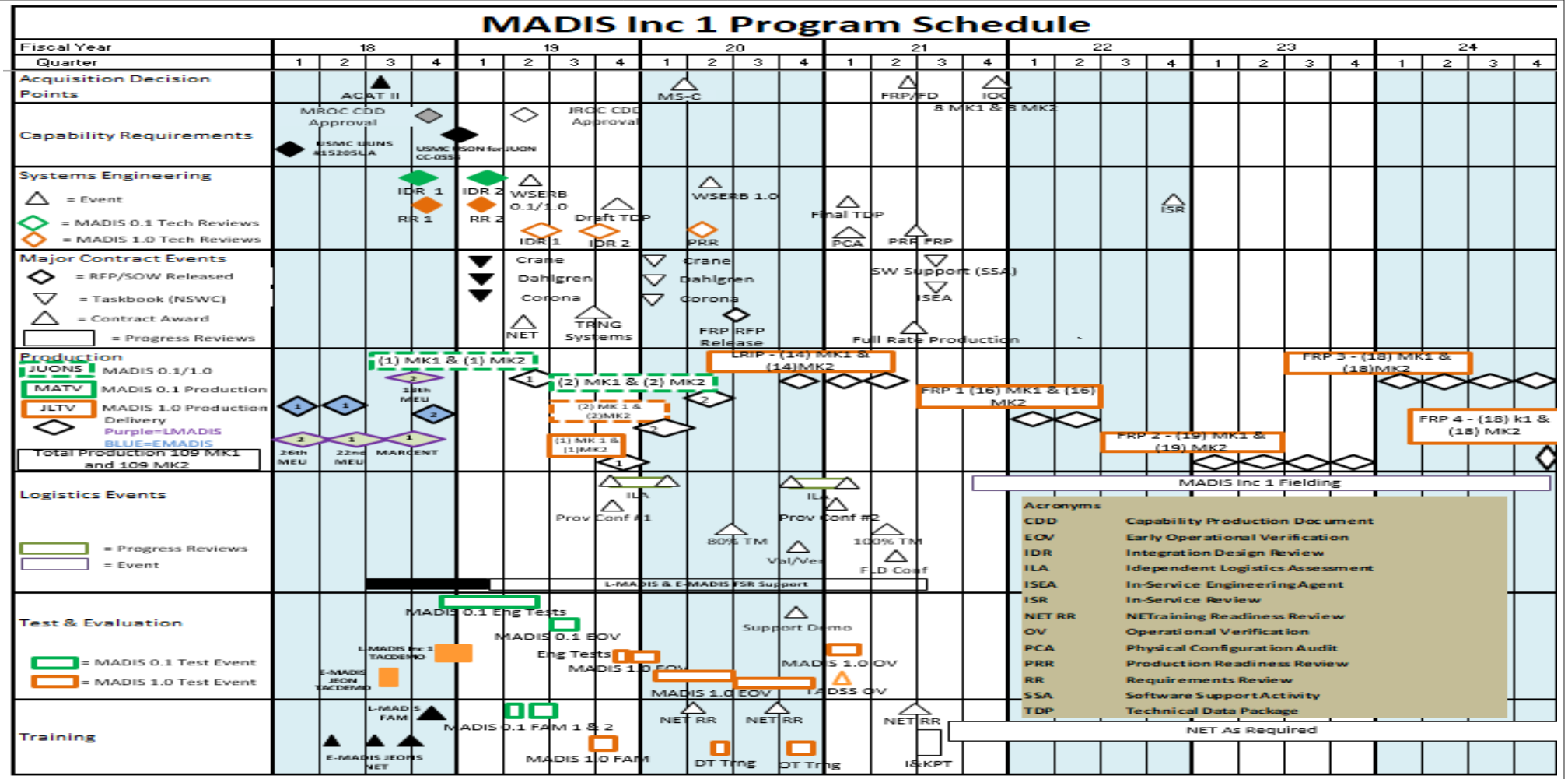


Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0206313M / *Marine Corps Comms Systems*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Radar System Development				
AN/TPS-59 Array Drive (AD) Fielding Decision (FD)	1	2019	1	2019
AN/TPS-59 PDSS ECP FD	3	2019	3	2019
AN/TPS-59 MS C	3	2021	3	2021
FOB Protection- Counter-UAS				
Production/Integration: E-MADIS Integration	3	2018	2	2020
Production/Integration: MADIS Inc 0 Integration	4	2018	1	2020
Test & Evaluation: JUON T&E	4	2018	4	2020
Training: JUON Training	4	2018	4	2020