Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy											Date: May 2021	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604270N *I Electronic Warfare (EW) Dev*							
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
Total Program Element	1,147.540	107.097	127.718	139.535	-	139.535	-	-	-	-	-	-
0556: *EW Counter Response*	526.701	35.766	41.642	21.671	-	21.671	-	-	-	-	-	-
1742: *EW Technical Development and T&E*	7.173	1.696	1.613	1.638	-	1.638	-	-	-	-	-	-
2175: *Tactical Air Electronic Warfare*	544.590	48.429	54.189	72.451	-	72.451	-	-	-	-	-	-
3308: *Technology Development*	8.361	6.214	7.361	8.354	-	8.354	-	-	-	-	-	-
3309: *Assault Survivability Optimization*	5.165	6.896	0.828	23.395	-	23.395	-	-	-	-	-	-
3327: *MAGTF EW Aviation Development*	51.960	7.641	9.896	12.026	-	12.026	-	-	-	-	-	-
3371: *MAGTF EW Interoperability Development*	3.590	0.455	1.189	0.000	-	0.000	-	-	-	-	-	-
9999: *Congressional Adds*	0.000	0.000	11.000	0.000	-	0.000	-	-	-	-	-	-

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 418

A. Mission Description and Budget Item Justification

This program element includes development of Electronic Warfare (EW) systems for the United States Navy (USN), United States Marine Corps (USMC), and United States Army tactical aircraft, USMC helicopters, surface combatants, data link vulnerability assessments, precision targeting, USN and USMC radio frequency jammers, and development and testing of electronic warfare devices for emerging threats and emergency contingencies. This element also includes: development of hardware/ software solutions that link on-board integrated Aircraft Survivability Equipment (iASE) that are compatible with mission planning information and systems; studies, analysis and evaluations of current and future aircraft threats and Advanced EW Suite capabilities; modeling and simulation for improved countermeasure capabilities, and development and testing to address new and emerging threats. The projects in this element improve the ability of the Joint Force to strike diverse targets inside adversary air and missile defense networks to destroy mobile power-projection platforms and enhance close combat lethality in complex terrain.
This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604270N *I Electronic Warfare (EW) Dev*

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	114.349	134.194	119.285	-	119.285
Current President's Budget	107.097	127.718	139.535	-	139.535
Total Adjustments	-7.252	-6.476	20.250	-	20.250
• Congressional General Reductions	-	-4.196			
• Congressional Directed Reductions	-	-13.280			
• Congressional Rescissions	-	-			
• Congressional Adds	-	11.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-4.008	0.000			
• SBIR/STTR Transfer	-3.244	0.000			
• Program Adjustments	0.000	0.000	22.388	-	22.388
• Rate/Misc Adjustments	0.000	0.000	-2.138	-	-2.138

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2020	FY 2021
Project: 9999: *Congressional Adds*		
Congressional Add: *Intrepid Tiger II*	0.000	11.000
Congressional Add Subtotals for Project: 9999	0.000	11.000
Congressional Add Totals for all Projects	0.000	11.000

Change Summary Explanation

The FY22 funding request was increased by $20.250 million for continued development of Electronic Warfare (EW) systems.

Project Unit 3309 / Assault Survivability Optimization: FY 2022 increase of $22.516 million to award the EMD contract to re-design and upgrade hardware and software solutions for the ALE-47 Countermeasure Dispensing Systems for DoN aircraft required to standardize countermeasures across Services and increase capability/lethality/survivability; increase countermeasure carriage to support operations in contested environments, extend mission time-on-target and reduces logistics footprint during Fleet deployment and operations.

Project Unit 3371 / MAGTF EW Interoperability Development: FY22 decrease of -$1.012 million due to NAVAIR Mission Aligned Organization realignment and the Marine Air Ground Task Force funds starting in FY22 through FY26 were realigned to PE 0605217N PU 0572.

Schedule:

Project Unit 0556 / EW Counter Response

Special Capability Pod payload analysis added from 1st Qtr. FY 2022 to 4th Qtr. FY 2022.

Project Unit 2175 / Tactical Air Electronic Warfare:
Program Milestones: ALQ-214 Software Improvement (SWIP) Operational Flight Program (OFP) completion milestone added to 4th Qtr. FY 2020. SWIP Fielding Decision changed from 4th Qtr. FY 2020 to 3rd Qtr. FY 2021 due to software development delays; contractor effort is completed, awaiting government Mission Data File completion.

Acquisition Milestones: Adaptive Radar Countermeasures (ARC) Quick Reaction Capability (QRC) Fielding decision removed from the schedule. Dual Band Decoy (DBD) Risk Reduction Contract Award was removed from the schedule. DBD Production Contract award was updated to commence in a schedule after FY 2022 due to the elimination of the Risk Reduction Contract effort.

Systems Development: ALQ-214 SWIP Development completion date changed from 3rd Qtr. FY 2020 to 3rd Qtr. FY 2021 due to software development delays; contractor effort is completed, awaiting government Mission Data File completion. ARC QRC Fielding decision removed from the schedule. Completed ARC System Requirements Review and refined requirements incorporating Design Review 1 (DR1) from Preliminary Design Review (PDR), changing Critical Design Review (CDR) from 2nd Qtr. FY 2022 to DR2 in 4th Qtr. FY 2021 and adding DR3 to 4th Qtr. FY 2022. Each design review is a prerequisite requirement to a spiral release to the USG and aligns with the Agile development methodology being executed. ALQ-214 ARC Development was further defined to align with the ARC acquisition strategy. ARC Requirements Definition was added from 1st Qtr. FY 2020 through 3rd Qtr. FY 2020. ARC Phase II changed to Mainline ARC Integration beginning in 4th Qtr. FY 2020 through 4th Qtr. FY 2022. ALQ-214 ARC Development Build 1 changed from 3rd Qtr. FY 2021 to 1st Qtr. FY 2022 due to subcontractor award delays and availability of subcontractor subject matter experts. ALQ-214 ARC Development Build 1 is on track to meet the 1st Qtr. FY2022 target.

Test and Evaluation: ARC Developmental and Integration Testing start changed to 1st Qtr. FY 2020 continuing through FY 2022. DBD DT testing changed from 3rd Qtr. FY 2022 to commence in a schedule after FY 2022 due to the elimination of the DBD Risk Reduction Contract effort.

Production Milestones: Full Rate Production (FRP) ALQ-214 Contract Awards 19-22 and respective deliveries were removed beginning in FY 2022 due to a reduction in total operational systems to better align with total fleet aircraft needs. Procurement of ALQ-214 Shop Replaceable Assembly (SRA) Retrofit contract awards and respective deliveries added in FY 2022, required for ARC processing capabilities. DBD Early Operational Capability (EOC 1) changed from 2nd Qtr. FY 2022 to commence in a schedule after FY 2022.

Deliveries: FRP 15 deliveries start date changed from 3rd Qtr. FY 2020 to 1st Qtr. FY 2021 due to software/firmware delays for Digital Receiver Technique Generator (DRTG G2) to enable operation of ARC on the ALQ-214. FRP 16 deliveries will start 1st Qtr FY 2022. FRP 17 and FRP 18 deliveries will commence in schedule after FY 2022.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604270N *I Electronic Warfare (EW) Dev*

Project Unit 3308 / Technology Development: Acquisition Milestones: FY 2020 Operational Flight Program (OFP) changed from 2nd Qtr. FY 2020 to 4th Qtr. FY 2020 with the release of software version 7.4. The 7.4.1 software version was released in the 2nd Qtr. FY 2021. Target Generator nomenclature changed to Mobile Test Van/Moving Target Generator.

Project Unit 3309 / Assault Survivability Optimization: FY 2020 1X1X8 form factor flare effectiveness testing for AH-1Z/UH-1Y down selected to UH-1Y based on fleet requirements. UH-1Y and MV-22 flight test moved from 3rd/4th Qtr. FY 2020 to 1st Qtr. FY 2021 based on aircraft and test range availability and to combine test with other service aircraft to reduce cost and maximize national asset seeker test vans. FY 2020 F/A-18E/F air to air flight test moved from 3rd/4th Qtr. FY 2020 to 2nd Qtr. FY 2021 due to range availability and combining test with F-35 flight test. FY 2022 program schedule incorporates milestones, contracts and test and evaluation efforts to implement ALE-47 Common Carriage system upgrades and optimization of Common Carriage countermeasures.

Project Unit 3327 / MAGTF EW Aviation Development: BLK X has been broken out into a rack-mounted system, officially designated as AN/ALQ-231(V)4, and a follow on BLK X C-130 variant. AN/ALQ-231(V)4 TD Release complete 2nd Qtr 2022. AN/ALQ-231(V)4 Developmental Test will complete 4th Qtr FY 2021; AN/ALQ-231(V)4 Operational Test will complete 2nd Qtr FY 2022.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy									Date: May 2021			
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*				Project (Number/Name) 0556 / *EW Counter Response*			
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
0556: *EW Counter Response*	526.701	35.766	41.642	21.671	-	21.671	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Jammer Techniques Optimization (JATO) organization produces the jamming techniques and Electronic Attack (EA) optimization algorithms that are critical for current and future Airborne Electronic Attack (AEA) systems of the United States Navy (USN) and United States Marine Corps (USMC) to execute the evolving AEA mission. Through Modeling & Simulation (M&S), laboratory testing, and field testing, JATO optimizes parameters for existing EA systems (such as AN/ALQ-99 Tactical Jamming System (TJS) and the AN/ALQ-231(V) Intrepid Tiger II Family of Systems) to best counter existing threats, and applies that knowledge to define the requirements for follow-on AEA systems such as the Next Generation Jammer Mid-Band (NGJ-MB) and Next Generation Jammer Low Band (NGJ-LB) programs. As commercial and military Radio Frequency (RF) threats evolve and proliferate, the JATO organization provides updated tactics, techniques, and procedures to maximize the potency of USN and USMC AEA in meeting the Combatant Command (COCOM) Commanders' EW priorities, to include highly contested environments, Force Protection, Information Operations, and enhanced communications jamming. (Classified discussion available upon request).

JATO's Advanced Techniques Group (ATG) focuses specifically on electronic countermeasures to advanced threat weapon systems and Command, Control, and Communications (C3) networks that are challenging existing EA approaches, and how to best apply advances in geolocation and unknown threat characterization to EA responses. Additional efforts include risk reduction activities to evaluate and minimize EA interference with US weapons systems, and research/technology studies in support of upgrades to existing AEA systems such as the AN/ALQ-99 TJS.

The Electronic Warfare (EW) Advanced Capability Development project focuses on increasing the Department of the Navy's understanding and utilization of rapidly-evolving technologies that operate in the Electromagnetic spectrum. As commercial and military Radio Frequency (RF) threats evolve and proliferate, this project tracks the relevant technology, intelligence, and tactics to maximize the potency of USN and USMC AEA through the rapid insertion of emergent technologies into existing AEA weapon systems and aircraft platforms.

The Special Capability Pod (SCP) project leverages existing Navy and Joint Service investments and focuses on continued development, test and evaluation of SCPs for highly flexible Electronic Warfare (EW) on USN EA-18G aircraft. Initial efforts to develop Navy pod variants were funded by the Air Force in FY18 as an OSD initiative. The SCPs will be specifically designed to address EW capability gaps and counter emerging electronic threats. As an iterative program, the highly modular interior design of the SCPs allows them to be integrated with current technology and upgraded electronics to provide the USN a rapidly adaptable solution against highly specialized and continuously evolving threats. (Classified discussion available upon request.)

The Electromagnetic Maneuver Warfare (EMW) Resource Allocation Management (RAM) project develops a software application to interface with the display in the cockpit of the EA-18G. The software application will provide the aircrew with smart decision aids in flight to enhance EW capability and survivability, optimized flight profiles, and jamming effectiveness in highly contested environments. EMW RAM efforts are being conducted as a collaborative project with Australia under the Airborne Multi-Platform Electronic Warfare Project Arrangement.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Jammer Techniques Optimization (JATO)	16.505	16.835	17.172	0.000	17.172
Articles:	-	-	-	-	-
FY 2021 Plans: The JATO organization will continue engineering development and test support of existing and emerging systems such as, but not limited to, the EA-18G, AN/ALQ-249 (NGJ-MB) and Next Generation Jammer Low Band (NGJ-LB) to address potential RF and Cyber/EW effects on current and evolving radar/communications threats. JATO will continue to generate tactics, techniques, and procedures to optimize the capabilities of systems such as, but not limited to, the AN/ALQ-99, ALQ-218, ALQ-227, AN/ALQ-231(V), and Unmanned Aerial Systems (UAS) payloads. JATO continues to meet COCOM Commanders' EW priorities including support for Overseas Contingency Operations and Force Protection. (Classified discussion available upon request).					
FY 2022 Base Plans: The JATO organization will continue engineering development and test support of existing and emerging systems such as, but not limited to, the EA-18G, AN/ALQ-249 (NGJ-MB) and Next Generation Jammer Low Band (NGJ-LB) to address potential RF and Cyber/EW effects on current and evolving radar/communications threats. JATO will continue to generate tactics, techniques, and procedures to optimize the capabilities of systems such as, but not limited to, the AN/ALQ-99, ALQ-218, ALQ-227, AN/ALQ-231(V), and Unmanned Aerial Systems (UAS) payloads. JATO continues to meet COCOM Commanders' EW priorities including support for Overseas Contingency Operations and Force Protection. (Classified discussion available upon request).					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: Funding increases from FY 2021 to FY 2022 due to inflation.					
Title: Electronic Warfare (EW) Advanced Development	7.536	4.141	4.239	0.000	4.239
Articles:	-	-	-	-	-
FY 2021 Plans: Efforts in FY 2021 include initial hardware and software prototyping, engineering, and multi-system effects characterization for capabilities into systems including, but not limited to, the AN/ALQ-99, AN/ALQ-231, AN/ALQ-249, NGJ-LB, and other manned and unmanned aircraft payloads to address existing capability gaps on COCOM Integrated Priority Lists. FY 2021 funding supports research, development, integration and test and					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
evaluation of advanced technologies into current, and future, Airborne Electronic Attack (AEA) weapons systems in laboratory and operational environments. (Classified discussion available upon request). ***FY 2022 Base Plans:*** Efforts in FY 2022 include initial hardware and software prototyping, engineering, and multi-system effects characterization for capabilities into systems including, but not limited to, the AN/ALQ-99, AN/ALQ-231, AN/ALQ-249, NGJ-LB, Intrepid Tiger II, MALD-N and Special Capability/SPIN Pods payloads to address existing capability gaps on COCOM Integrated Priority Lists. FY 2022 funding supports research, development, integration and test and evaluation of advanced technologies into current, and future, Airborne Electronic Attack (AEA) weapons systems in laboratory and operational environments. (Classified discussion available upon request). ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding increases from FY 2021 to FY 2022 due to inflation.					
Title: Special Capability Pod (SCP)	11.600	20.026	0.120	0.000	0.120
Articles:	-	-	-	-	-
Description: The Special Capability Pods (SCPs) project leverages other ongoing Navy and Joint Service investments and focuses on continued development, test and evaluation of rapidly repurposable pods for highly flexible Airborne Electronic Attack capability. ***FY 2021 Plans:*** FY 2021 efforts for SCP include continued test and evaluation of the initial two prototypes, as well as development and lab/flight demonstration of alternate payloads with various research labs and industry partners. SCP software and operator interface will also be updated based on Fleet TTP development during integrated testing and the initial operational deployment of SCP. Additional SCPs will be built to support a limited contingency capability for COCOM Commanders, including potential flight test to enable carrier-based deployment with embarked EA-18G squadrons. (Classified discussion available upon request.) ***FY 2022 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
FY 2022 efforts include completion of test activities and the analysis of alternate SCP payloads to address a limited contingency capability for COCOM Commanders. (Classified discussion available upon request.) ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding decreases from FY 2021 to FY 2022 as SCP prototypes are funded with FY 2021 funding, and program focuses on payload analysis.					
Title: Electromagnetic Manuever Warfare (EMW) Resource Allocation Manager (RAM) ***Articles:*** ***Description:*** The Department of Navy is developing dynamic Electromagnetic Maneuver Warfare (EMW) Resource Allocation Management (RAM) applications to increase operators effectiveness in the Electromagnetic Spectrum (ES). ***FY 2021 Plans:*** Continue development of EMW RAM architecture framework. Consolidate and analyze data collected during algorithm demonstration. Initial implementation of the EMW RAM platform agnostic algorithms into specific aircraft systems and sub-systems or designated surrogate hardware. ***FY 2022 Base Plans:*** Complete development of EMW RAM architecture framework. Consolidate and analyze data collected during algorithm demonstration. Initial implementation of the EMW RAM platform agnostic algorithms into specific aircraft systems and sub-systems or designated surrogate hardware. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding decreases from FY 2021 to FY 2022 as EMW RAM architecture framework effort completes.	0.125 -	0.640 -	0.140 -	0.000 -	0.140 -
Accomplishments/Planned Programs Subtotals	35.766	41.642	21.671	0.000	21.671

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• APN/0513: *AEA Systems*	33.775	21.061	23.296	-	23.296	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

The JATO organization, comprised of a partnership between the Government and several University Affiliated Research Centers, continues to research EW tactics and techniques. The JATO prime delivery order, a cost plus fixed fee contract, was awarded to Johns Hopkins University.

The Electronic Warfare (EW) Advanced Capability Development project will investigate developmental and existing technologies from commercial and governmental sources for integration into current and emerging USN and USMC EW weapon systems and aircraft. These technologies, once demonstrated to have sufficient maturity, will transition into the applicable acquisition programs. Additionally, the project will pursue technology development and demonstration through rapid acquisition or Speed to Fleet initiatives to the greatest extent possible.

The Special Capability Pod (SCP) project leverages existing Navy and Joint Service investments and focuses on continued development, test and evaluation of SCPs for highly flexible Electronic Warfare (EW) on USN EA-18G aircraft. Initial efforts to develop Navy pod variants were funded by the Air Force in FY18 as an OSD initiative. The SCPs will be specifically designed to address EW capability gaps and counter emerging electronic threats. As an iterative program, the highly modular interior design of the SCPs allows them to be integrated with current technology and upgraded electronics to provide the USN a rapidly adaptable solution against highly specialized and continuously evolving threats. (Classified discussion available upon request.)

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary HDW Development - SCP	MIPR	Air Force Research Lab : Ohio	0.000	0.000		1.446	May 2021	0.000		-		0.000	-	-	-
Primary HDW Development - SCP	WR	NAWCAD : Patuxent River, MD	0.000	0.000		4.590	May 2021	0.000		-		0.000	-	-	-
Systems Engineering	WR	Naval Research Lab : Maryland	17.703	1.980	Nov 2019	1.835	Nov 2020	1.872	Nov 2021	-		1.872	-	-	-
Systems Engineering	WR	NAWCAD : Patuxent River, MD	29.600	7.083	Nov 2019	7.437	Nov 2020	0.899	Nov 2021	-		0.899	-	-	-
Systems Engineering	WR	NAWCWD : Point Mugu, CA	97.604	7.394	Nov 2019	6.448	Nov 2020	6.169	Nov 2021	-		6.169	-	-	-
Systems Engineering	WR	NAWCWD : China Lake, CA	0.000	3.491	Nov 2019	4.302	Nov 2020	0.140	Nov 2021	-		0.140	-	-	-
Systems Engineering	WR	NSWC Det : Crane, IN	11.991	1.336	Nov 2019	1.931	Nov 2020	1.214	Nov 2021	-		1.214	-	-	-
Systems Engineering	Various	Various : Various	15.243	0.750	Nov 2019	0.115	Nov 2020	0.117	Nov 2021	-		0.117	-	-	-
Prior Year Development cost no longer Funded in the FYDP	Various	Various : Various	263.147	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	435.288	22.034		28.104		10.411		-		10.411	-	-	N/A

Remarks

Funding decreases from FY 2021 to FY 2022 due to efforts related to SCP prototypes completing in FY 2021.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - Jammer Techniques Optimization (JATO)	SS/CPFF	Johns Hopkins Unv : Maryland	53.698	3.564	Dec 2019	3.595	Dec 2020	4.117	Dec 2021	-		4.117	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - EW Advanced Development	SS/CPFF	Johns Hopkins Unv : Maryland	0.000	0.400	Dec 2019	0.350	Dec 2020	0.357	Dec 2021	-		0.357	-	-	-
Development Support - EW Advanced Development	SS/CPFF	GTRI : Atlanta, GA	0.000	2.118	Dec 2019	0.912	Dec 2020	1.395	Dec 2021	-		1.395	-	-	-
Eng & Tech Srvc (Non FFRDC)	Various	Various : Various	20.867	3.523	Dec 2019	2.111	Dec 2020	2.016	Dec 2021	-		2.016	-	-	-
Eng & Tech Srvc (FFRDC)	Various	Various : Various	0.500	0.588	Dec 2019	0.600	Dec 2020	0.612	Dec 2021	-		0.612	-	-	-
Prior year Support costs no longer funded in the FYDP	Various	Various : Various	3.630	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	78.695	10.193		7.568		8.497		-		8.497	-	-	N/A

Remarks

Funding increases from FY 2021 to FY 2022 due to ADEV/JATO related efforts at GTRI and JHU.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JATO Flight Test	WR	NAWCWD : Point Mugu, CA	4.262	0.850	Nov 2019	0.878	Nov 2020	0.896	Nov 2021	-		0.896	-	-	-
JATO Ground/Lab Test	WR	NAWCWD : Point Mugu, CA	5.668	1.205	Nov 2019	1.682	Nov 2020	1.714	Nov 2021	-		1.714	-	-	-
SCP Test	WR	Various : Various	0.000	1.443	Nov 2019	3.310	Nov 2020	0.060	Nov 2021	-		0.060	-	-	-
Prior year Test and Evaluation costs no longer funded in the FYDP	Various	Various : Various	0.925	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	10.855	3.498		5.870		2.670		-		2.670	-	-	N/A

Remarks

Funding decreases from FY 2021 to FY 2022 due to the majority of SCP test events completing in FY 2021.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	Various : Various	1.348	0.000		0.000		0.000		-		0.000	-	-	-
Travel	WR	Various : Various	0.515	0.041	Oct 2019	0.100	Oct 2020	0.093	Oct 2021	-		0.093	-	-	-
		Subtotal	1.863	0.041		0.100		0.093		-		0.093	-	-	N/A

Remarks

Funding decreases from FY 2021 to FY 2022 due to SCP travel requirements ending in FY 2021.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	526.701	35.766		41.642		21.671		-		21.671	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

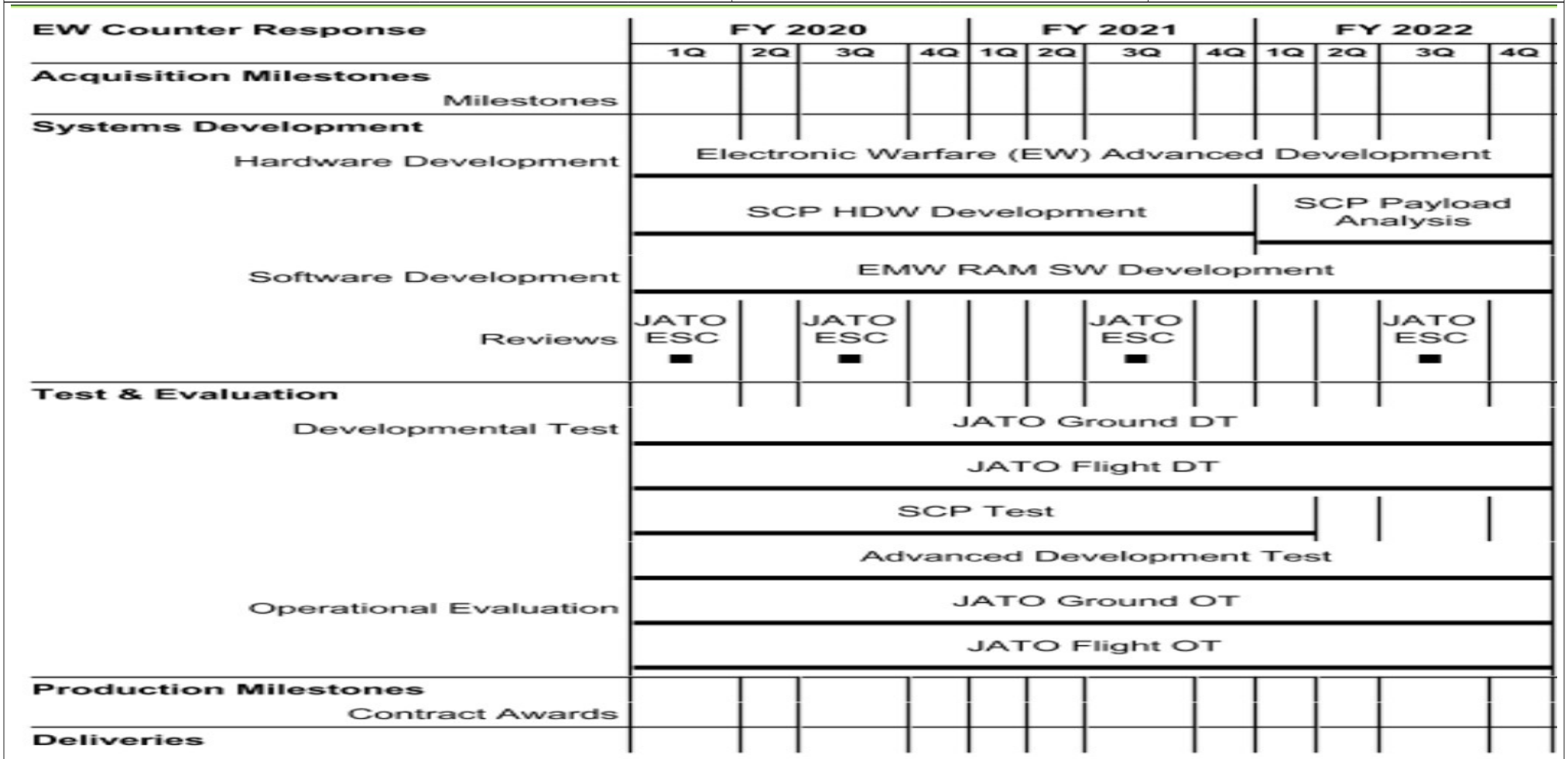


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
EW Counter Response				
Systems Development: Hardware Development: Electronic Warfare (EW) Advanced Development	1	2020	4	2022
Systems Development: Hardware Development: Special Capability Pod (SCP) Hardware Development	1	2020	4	2021
Systems Development: Hardware Development: Special Capability Pod (SCP) Payload Analysis	1	2022	4	2022
Systems Development: Software Development: Electromagnetic Manuever Warfare (EMW) Resource Allocation Manager (RAM) Development	1	2020	4	2022
Systems Development: Reviews: JATO Executive Steering Committee 2019	1	2020	1	2020
Systems Development: Reviews: JATO Executive Steering Committee 2020	3	2020	3	2020
Systems Development: Reviews: JATO Executive Steering Committee 2021	3	2021	3	2021
Systems Development: Reviews: JATO Executive Steering Committee 2022	3	2022	3	2022
Test & Evaluation: Developmental Test: JATO Ground Developmental Test	1	2020	4	2022
Test & Evaluation: Developmental Test: JATO Flight Developmental Test	1	2020	4	2022
Test & Evaluation: Developmental Test: SCP Test	1	2020	1	2022
Test & Evaluation: Developmental Test: Advanced Development Test	1	2020	4	2022
Test & Evaluation: Operational Evaluation: JATO Ground Operational Test	1	2020	4	2022
Test & Evaluation: Operational Evaluation: JATO Flight Operational Test	1	2020	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 1742 / *EW Technical Development and T&E*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1742: *EW Technical Development and T&E*	7.173	1.696	1.613	1.638	-	1.638	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Provide for quick reaction prototyping of tactical information and electronic warfare systems. Systems address various requirements across multiple platforms (air, surface, and subsurface), airborne and surface cryptologic operational requirements, and joint missions to research, assess, and develop information warfare and electronic warfare systems and capabilities. These systems/capabilities provide information dominance to friendly forces during conflict necessary for successful mission accomplishment. (Details held at a higher classification).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Electronic Warfare Technical Development and Test & Evaluation	1.696	1.613	1.638	0.000	1.638
Articles:	-	-	-	-	-
FY 2021 Plans: *Based on study and prototype products, determine feasibility for a Fleet Ready capability to support COCOM directed requirements. *Continued engineering systems such as the EA-6B, EA-18G, and Next Generation Jammer to address potential RF and Cyber/EW effects on current and evolving radar/communications threats. *Continued to generate any new techniques, tactics, and procedures to optimize the capabilities of systems such as, but not limited to, SSEE INC-E (with SPLITROCK), SSEE INC-F, the AN/ALQ-99, USQ-113, ALQ-218, ALQ-227, AN/ALQ-231, ALE-43, and systems in development; assist in requirements definitions of emerging AEA systems. *Developed a prototype for a flexible EW platform to integrate with mission partner systems. (Details held at a higher classification, beyond GENSER).					
FY 2022 Base Plans: *Based on study and prototype products, determine feasibility for a Fleet Ready capability to support COCOM directed requirements.					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 1742 / *EW Technical Development and T&E*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
*Continue engineering systems such as the EA-6B, EA-18G, and Next Generation Jammer to address potential RF and Cyber/EW effects on current and evolving radar/communications threats. *Continue to generate any new techniques, tactics, and procedures to optimize the capabilities of systems such as, but not limited to, SSEE INC-E (with SPLITROCK), SSEE INC-F, the AN/ALQ-99, USQ-113, ALQ-218, ALQ-227, AN/ALQ-231, ALE-43, and systems in development; assist in requirements definitions of emerging AEA systems. *Develop a prototype for a flexible EW platform to integrate with mission partner systems. (Details held at a higher classification, beyond GENSER). ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** FY22 increase of $25K will support a shift in scope of the studies and analysis contract supporting Electronic Warfare.					
Accomplishments/Planned Programs Subtotals	1.696	1.613	1.638	0.000	1.638

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Development of classified prototypes and special capabilities. The Navy is granted streamlined acquisition authority for the development of classified prototypes and special capabilities under the Deputy Assistant Secretary of the Navy (DASN) Information Warfare.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 1742 / *EW Technical Development and T&E*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development(1)	C/FP	Classified : classified	4.963	1.696	Oct 2019	1.613	Oct 2020	1.638	Oct 2021	-		1.638	-	-	-
		Subtotal	4.963	1.696		1.613		1.638		-		1.638	-	-	N/A

Remarks

1-Due to classification category, may not be on GENSER classified exhibits.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NAVSEA : Maryland	0.600	0.000		0.000		0.000		-		0.000	-	-	-
Studies & Analysis(1)	C/CPFF	Classified : Classified	0.653	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	1.253	0.000		0.000		0.000		-		0.000	-	-	N/A

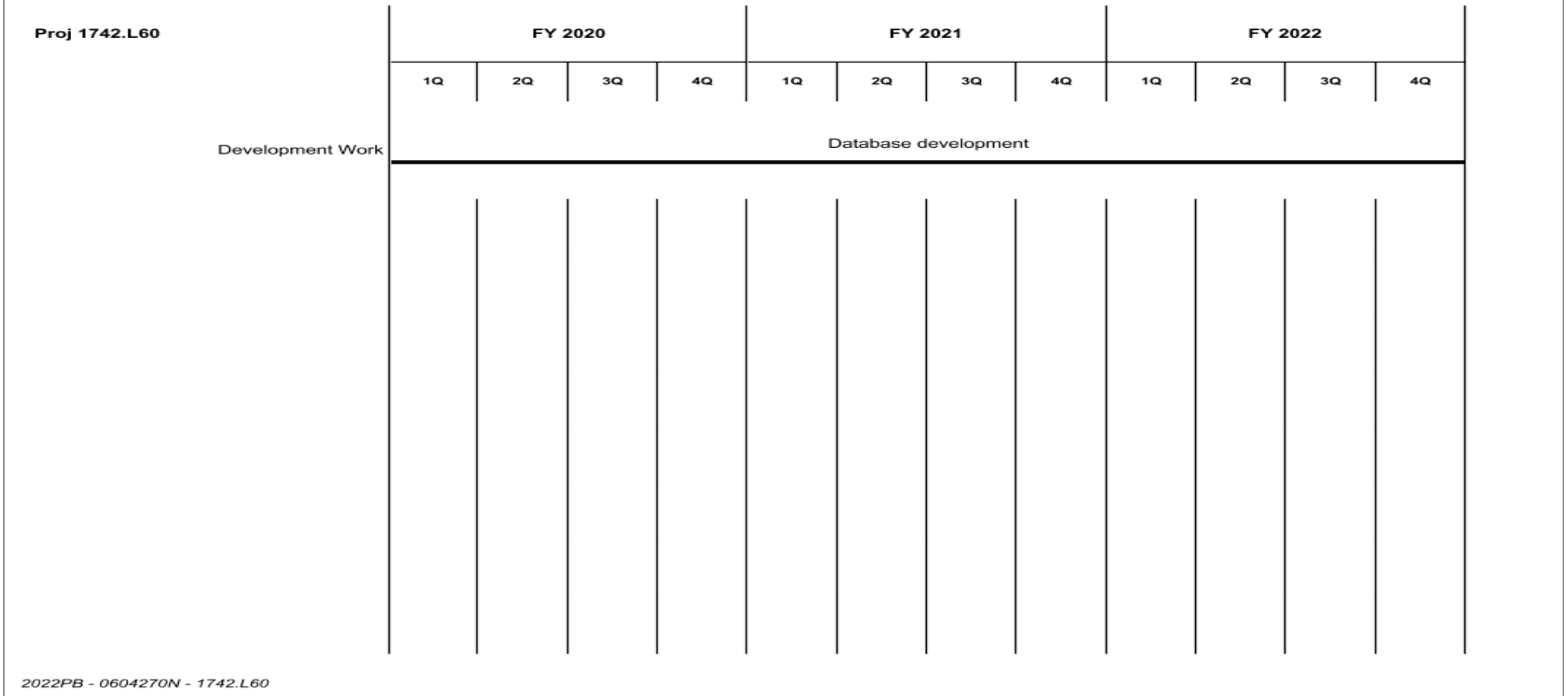
Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Mod & Sim	C/CPFF	Classified : Classified	0.957	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	0.957	0.000		0.000		0.000		-		0.000	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	7.173	1.696		1.613		1.638		-		1.638	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 1742 / *EW Technical Development and T&E*



2022PB - 0604270N - 1742.L60

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 1742 / *EW Technical Development and T&E*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1742.L60				
Development Work: Database development	1	2020	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 2175 / *Tactical Air Electronic Warfare*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2175: *Tactical Air Electronic Warfare*	544.590	48.429	54.189	72.451	-	72.451	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 418

A. Mission Description and Budget Item Justification

Integrated Defensive Electronic Countermeasures (IDECM) Block 4 (IB-4) is an Engineering Change Proposal (ECP) to the ALQ-214 to render it suitable for operation on F/A-18C/D aircraft (replacing the ALQ-126B and significantly improving F/A-18C/D survivability) while retaining all IDECM suite functionality when installed on F/A-18E/F aircraft. The IB-4 acquisition and contract strategy includes development of the Common On-Board Jammer for the F/A-18 C/D/E/F aircraft through sole source contract awards for modifications to the ALQ-214. IB-4, ALQ-214 ECP efforts include hardware and software design, development, integration and testing on the host aircraft. The F/A-18 EW suite includes the ALR-67 Radar Warning Receiver (RWR), the ALE-47 Countermeasures Dispensing Set (CMDS), the mission computer and other avionics.

ALQ-214 software improvement will provide the ALQ-214 with Digital Radio Frequency Memory (DRFM) technique capability significantly improving F/A18C/D/E/F survivability. Acquisition and contract strategy includes development, integration and test of the ALQ-214 software improvements through sole-source contract award. Modifications to other F/A-18E/F Block II and Block III aircraft avionics may be required in order to develop and integrate this capability. These other avionics may include, but are not limited to, the ALR-67(V)2, ALR-67(V)3, ALE-47, ALE-50 AAED, ALE-55 FOTD, mission computer and fire control radar.

F/A-18 E/F ALQ-214 Adaptive Radar Countermeasures (ARC) will provide the ALQ-214A(V)4/5 with improved Radio Frequency (RF) threat detection algorithms and jamming against modern threat radars. Modifications to other F/A-18C/D/E/F Block II and Block III aircraft avionics may be required in order to develop and integrate this capability. These other avionics may include, but are not limited to, the ALR-67(V)3, ALE-47, ALE-50 AAED, ALE-55 FOTD, mission computer and fire control radar. ARC capabilities may be integrated into other DoD platforms with radar warning receivers or countermeasures systems.

The Dual Band Decoy (DBD) will provide expanded RF capability against current and emerging modern RF threat radars, significantly improving the survivability of the F/A-18 E/F and may be further developed and integrated into other Naval platforms. DBD will leverage Science and Technology (S&T) advancements through the Dual Band Intelligent RF Expendable (DIRE) program to accelerate DBD capability development. DBD will replace the current ALE-55 FOTD. Modifications to other F/A-18E/F Block II and Block III aircraft avionics may be required in order to develop and integrate this capability. These other avionics may include, but are not limited to, the ALR-67(V)2, ALR-67(V)3, ALE-47, ALE-50 AAED, ALE-55 FOTD, mission computer and fire control radar.

This Project also includes/enables integrated Aircraft Survivability Equipment (iASE) which improves situational awareness for own-ship, wingman, and distributed command and control.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

Projects in this element also includes studies, investigations, and analysis for Advanced Electronic Warfare (EW) Suite capabilities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Tactical Air EW	48.429	54.189	72.451	0.000	72.451
Articles:	-	-	-	-	-
FY 2021 Plans: FY21 - IDECM ARC Development, Integration and Test will continue through FY 2022. IOC incremental releases are planned for the ARC capability starting in FY 2021. FY 2021 funding supports Contractor ARC development, Organic laboratory/flight testing, Mission Data File Optimization and Multi-Spectral Defensive Electronic Warfare Systems Support Activity (MDEWSSA) Release Support. Dual Band Decoy (DBD) Competitive Prototyping continues through FY 2021, followed by a competitively awarded EMD phase including Development, Integration and Test starting in FY 2022. Dual Band Intelligent RF Expendable (DIRE) program encompasses the design, fabrication, lab and flight testing of an integrated dual band RF countermeasure.					
FY 2022 Base Plans: FY22 - IDECM ARC Development, Integration and Test will continue through FY 2022. Dual Band Decoy (DBD) competitively awarded EMD phase including Development, Integration and Test will start in FY 2022.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: Increase of $18.3M from FY 2021 to FY 2022 to fund Dual Band Decoy (DBD) competitively awarded EMD phase including Development, Integration and Test starting in FY 2022.					
Accomplishments/Planned Programs Subtotals	48.429	54.189	72.451	0.000	72.451

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• APN/0576 004-12: *Common On-Board Jammer*	55.224	42.387	25.479	-	25.479	-	-	-	-	-	-
• PANMC/0182: *Air Expendable CM*	14.698	0.000	0.000	-	0.000	-	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

C. Other Program Funding Summary ($ in Millions)

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

Remarks

PANMC 0182 Air Countermeasures (CM) funding represents only a portion of the total PANMC 0182 Air Expendable CM Budget. Based on DBD program IOC implementation and Naval Munitions Requirements Process (NMRP) Combat Requirements, Dual Band Decoy (DBD) PANMC 0182 funding was realigned in FY22 ($20.801M).

D. Acquisition Strategy

IB-4 Engineering Change Proposal (ECP) and Software Improvement (SWIP) development contracts were awarded sole-source to L3Harris (L3H) in 2009 and 2012 respectively. L3H is the original developer/manufacturer and current sustainer of the ALQ-214.

Mainline ARC Integration contract is a sole source contract awarded to Leidos 4th Qtr. FY 2020 and continuing through FY 2022. DBD development is planned as an evolutionary development approach with competitive prototyping phase which started in FY 2019 continuing through FY 2021, followed by a competitively awarded EMD phase starting in FY 2022.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Adaptive Radar Countermeasures (ARC) Development	SS/CPFF	Leidos : Arlington, VA	12.595	15.970	Jul 2020	14.885	Mar 2021	23.828	Dec 2021	-		23.828	-	-	-
Adaptive Radar Countermeasures (ARC) Development	SS/FFP	L3Harris : Clifton, NJ	1.844	0.000		0.000		0.000		-		0.000	-	-	-
Dual Band Decoy Development	C/FFP	BAE : Nashua, NH	12.000	12.000	Dec 2019	11.926	Nov 2020	0.000		-		0.000	-	-	-
Dual Band Decoy Development	C/FFP	Raytheon : Goleta, CA	12.000	12.000	Jan 2020	8.177	Nov 2020	0.000		-		0.000	-	-	-
Dual Band Decoy Development EMD	C/FFP	TBD : TBD	0.000	0.000		0.000		31.523	Dec 2021	-		31.523	-	-	-
Prior Year Prod Dev costs no longer funded in FYDP	Various	Various : Various	307.712	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	346.151	39.970		34.988		55.351		-		55.351	-	-	N/A

Remarks

IDECM ARC Development, Integration and Test began in FY 2020 and will continue through FY 2022. Contractor ARC Development increase from FY 2021 to FY 2022 ($8.943M) is due to ARC Spiral 1 Capability Delivery and Spiral 2 Capability Development and Integration. Contracted efforts include laboratory/flight testing, Mission Data File (MDF) Optimization and Multi-Special Defense Electronic Warfare System Support Activity (MDEWSSA). The DBD Demonstration of existing technology will complete in FY21 ($20.103M). A DBD competitive EMD phase will start in FY 2022 ($31.523M).

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Log Supt- ARC	WR	NAWCAD : Pax River, MD	0.000	0.057	Nov 2019	0.212	Nov 2020	0.107	Nov 2021	-		0.107	-	-	-
Software Dev-ALQ - 214 SW Dev	SS/CPFF	L3Harris : Clifton, NJ	30.875	0.590	Mar 2020	0.000		0.000		-		0.000	-	-	-
Engineering Support	WR	Various : Various	2.662	0.000		0.000		0.000		-		0.000	-	-	-
Engineering Support ARC	WR	Various : Various	1.414	1.583	Nov 2019	2.197	Nov 2020	2.191	Nov 2021	-		2.191	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support ARC	WR	NAWCAD : Pax River, MD	0.000	0.000		0.000		0.884	Nov 2021	-		0.884	-	-	-
Engineering Support Dual Band Decoy	WR	Various : Various	1.782	1.425	Nov 2019	2.829	Nov 2020	1.830	Nov 2021	-		1.830	-	-	-
Engineering Support Dual Band Decoy DIRE	WR	Various : Various	0.000	0.000		2.643	Jun 2021	0.000		-		0.000	-	-	-
Software Dev-ALQ - 214 SW Dev	C/CPFF	GTRI : Atlanta GA	0.222	0.270	Nov 2019	0.370	Dec 2020	0.300	Dec 2021	-		0.300	-	-	-
Prior Year Support costs no longer funded in FYDP	Various	Various : Various	21.104	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	58.059	3.925		8.251		5.312		-		5.312	-	-	N/A

Remarks

IDECM ARC Support for Development, Integration and Test continues through FY 2022. ARC Program Management Support costs ($.884M) increase in FY22 for additional oversight required for the ARC mainline integration with contractor. Dual Band Decoy (DBD) Support for Development, Integration and Test continues through FY 2022. Dual Band Intelligent RF Expendable (DIRE) program begins in FY 2021 ($2.643M) and will be completed within 12 months of contract award.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Test & Eval ALQ-214 SW Imp	WR	NAWCWD : China Lake, CA	0.952	1.494	Nov 2019	0.000		0.000		-		0.000	-	-	-
Integrated Test & Eval ALQ-214 SW Imp	WR	NAWCWD : Point Mugu, CA	0.000	0.282	Nov 2019	0.800	Nov 2020	0.000		-		0.000	-	-	-
Integrated Test & Eval ALQ-214 SW Imp C/D Aircraft	WR	NAWCWD : China Lake, CA	0.000	0.000		2.876	Dec 2020	1.124	Nov 2021	-		1.124	-	-	-
Oper Test & Eval IDECM	WR	NAWCWD : China Lake, CA	2.737	0.000		0.000		0.000		-		0.000	-	-	-
Eng & Tech Srvcs (Non-FFRDC)	SS/CPFF	Various : Various	2.485	0.000		0.000		0.000		-		0.000	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 2175 / *Tactical Air Electronic Warfare*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Eng Test & Eval ARC	WR	NAWCAD : Pax River, MD	0.321	0.502	Nov 2019	0.177	Nov 2020	0.293	Nov 2021	-		0.293	-	-	-
Eng Test & Eval DBD	WR	NAWCAD : Pax River, MD	0.000	0.000		0.240	Nov 2020	0.242	Nov 2021	-		0.242	-	-	-
Dev Test & Eval Supt ARC	WR	NAWCWD : Point Mugu, CA	0.000	0.152	Dec 2019	0.673	Nov 2020	0.000		-		0.000	-	-	-
Dev Test & Eval Supt ARC	WR	NAWCWD : China Lake, CA	0.000	0.831	Dec 2019	0.638	Nov 2020	0.000		-		0.000	-	-	-
Integrated Test & Eval ARC	WR	NAWCWD : Point Mugu, CA	0.000	0.000		0.000		2.459	Nov 2021	-		2.459	-	-	-
Integrated Test & Eval ARC	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		2.497	Nov 2021	-		2.497	-	-	-
Oper Test & Eval ARC	WR	Various : Various	0.000	0.000		0.000		0.000		-		0.000	-	-	-
Oper Test & Eval ARC (VX-9)	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		0.000		-		0.000	-	-	-
Dev Test & Eval Supt Dual Band Decoy	WR	Various : Various	0.000	1.250	Nov 2019	5.492	Nov 2020	5.117	Nov 2021	-		5.117	-	-	-
Integrated Test & Eval Dual Band Decoy	WR	Various : Various	0.000	0.000		0.000		0.000		-		0.000	-	-	-
Oper Test & Eval Dual Band Decoy	WR	Various : Various	0.000	0.000		0.000		0.000		-		0.000	-	-	-
Oper Test & Eval DBD (VX-9)	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		0.000		-		0.000	-	-	-
Prior Year T&E costs no longer funded in FYDP	WR	Various : Various	43.998	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	50.493	4.511		10.896		11.732		-		11.732	-	-	N/A

Remarks

ALQ-214 SWIP Integrated Test & Evaluation on the F/A-18 C/D aircraft was delayed due to priorities in fielding the F/A-18 E/F software upgrade first. This effort started in FY 2021 and will complete in FY 2022 ($.800M).
IDECM ARC Integration and Test continues through FY 2022. ARC DT&E ends in FY21 ($1.311M) and IT&E starts in FY22 ($5.256M).
FY 2021 DBD Test and Evaluation increase due to the start of prototype evaluations for each contractor during lab, chamber, and flight tests. DBD Integration and Test continues through FY 2022.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 2175 / *Tactical Air Electronic Warfare*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Allot	NAWCAD : Pax River, MD	0.952	0.023	Oct 2019	0.054	Oct 2020	0.056	Oct 2021	-		0.056	-	-	-
Prior Year Mgmt costs no longer funded in FYDP	Various	Various : Various	88.935	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	89.887	0.023		0.054		0.056		-		0.056	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	544.590	48.429		54.189		72.451		-		72.451	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

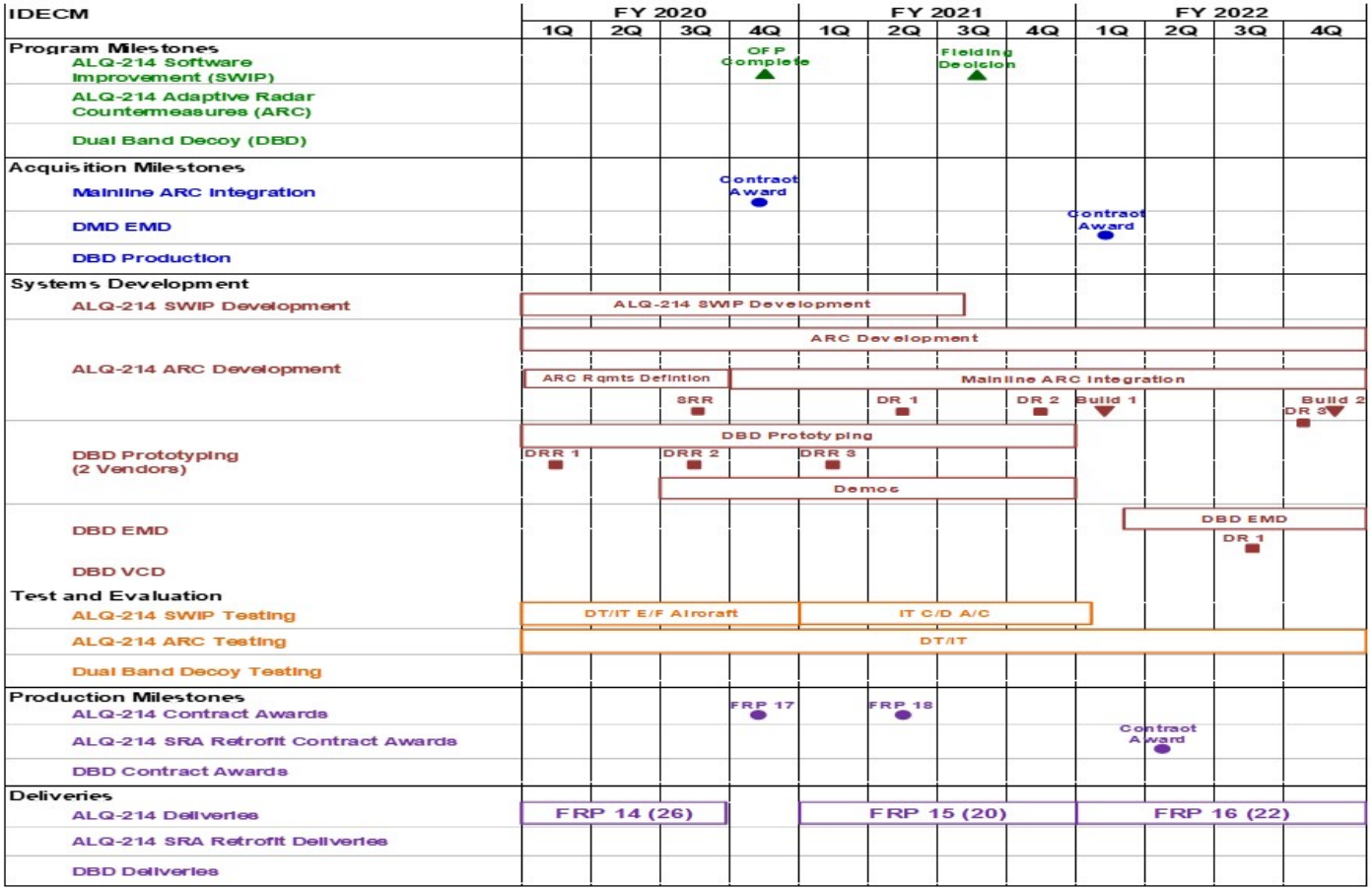


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
IDECM				
Acquisition Milestones: ALQ-214 SW Improvement: ALQ-214 SW Improvement Operational Flight Program	4	2020	4	2020
Acquisition Milestones: ALQ-214 SW Improvement: ALQ-214 SW Improvement Fielding Decision	3	2021	3	2021
Acquisition Milestones: ARC Integration Award: ARC Integration Award	4	2020	4	2020
Acquisition Milestones: DBD EMD: Contract Award	1	2022	1	2022
Systems Development: ALQ-214 SW Improvement Development: ALQ-214 SW Improvement Development	1	2020	3	2021
Systems Development: ALQ-214 ARC Development: ARC Development	1	2020	4	2022
Systems Development: ALQ-214 ARC Development: ARC Requirements Definition	1	2020	3	2020
Systems Development: ALQ-214 ARC Development: ALQ-214 ARC Mainline Integration	4	2020	4	2022
Systems Development: ALQ-214 ARC Development: ALQ-214 ARC Systems Requirements Review	3	2020	3	2020
Systems Development: ALQ-214 ARC Development: ALQ-214 ARC Design Review 1	2	2021	2	2021
Systems Development: ALQ-214 ARC Development: ALQ-214 ARC Design Review 2	4	2021	4	2021
Systems Development: ALQ-214 ARC Development: ALQ-214 ARC Design Review 3	4	2022	4	2022
Systems Development: ALQ-214 ARC Development: ALQ-214 ARC ML Build 1	1	2022	1	2022
Systems Development: ALQ-214 ARC Development: ALQ-214 ARC ML Build 2	4	2022	4	2022
Systems Development: Dual Band Decoy Prototyping (2 Vendors): DBD Prototyping	1	2020	4	2021
Systems Development: Dual Band Decoy Prototyping (2 Vendors): Design Readyness Review 1	1	2020	1	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 2175 / *Tactical Air Electronic Warfare*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Systems Development: Dual Band Decoy Prototyping (2 Vendors): Design Readyness Review 2	3	2020	3	2020
Systems Development: Dual Band Decoy Prototyping (2 Vendors): Design Readyness Review 3	1	2021	1	2021
Systems Development: Dual Band Decoy Prototyping (2 Vendors): Prototype Demonstrations	3	2020	4	2021
Systems Development: Dual Band Decoy EMD: DBD EMD	1	2022	4	2022
Systems Development: Dual Band Decoy EMD: Design Review 1	3	2022	3	2022
Test and Evaluation: ALQ-214 SW Improvement Testing: ALQ-214 SW Improvement Development Testing (DT)/Integrated Testing (IT) E/F	1	2020	4	2020
Test and Evaluation: ALQ-214 SW Improvement Testing: ALQ-214 SW Improvement Integrated Testing (IT) on C/D Aircraft	4	2020	4	2021
Test and Evaluation: ALQ-214 ARC Testing: ALQ-214 ARC Developmental and Integrated Testing	1	2020	4	2022
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 17	4	2020	4	2020
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 18	2	2021	2	2021
Production Milestones: Shop Replaceable Assembly Contract Awards: Shop Replaceable Assembly 1	2	2022	2	2022
Deliveries: IDECM Block 4: IDECM Block 4 FRP 14 Deliveries (26)	1	2020	3	2020
Deliveries: IDECM Block 4: IDECM Block 4 FRP 15 Deliveries (20)	1	2021	4	2021
Deliveries: IDECM Block 4: IDECM Block 4 FRP 16 Deliveries (22)	1	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 3308 / *Technology Development*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3308: *Technology Development*	8.361	6.214	7.361	8.354	-	8.354	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

PE 0604279N consolidated to PE 0604270N beginning in FY 2017.

A. Mission Description and Budget Item Justification

Project Unit 3308 / Technology Development funds efforts that focus on the quick reaction prototyping and fielding of Tactical Electronic Warfare (EW)/countermeasures solutions for increased resilience and survivability by improving the active electronic defense of tactical aircraft. This self-protection provides friendly forces the ability to deploy, survive, operate, maneuver, and regenerate in all domains while under attack as well as strike diverse targets inside adversary air and missile defense networks to destroy mobile power-projection platforms. This Project also includes/enables integrated Aircraft Survivability Equipment (iASE) which improves situational awareness for own-ship, wingman, and distributed command and control. Significant investments have been made in the modular hardware and reprogrammable software resident in ASE capability which is fielded today. Technology Development makes specific investments towards: countermeasure/jammer/receiver algorithm development, Advanced EW Suite capability studies/investigation/analysis, threat data file and model updates as modern threats continue to evolve. These updated data files and algorithms can be deployed within hours of release by squadron maintenance personnel to aircraft while still on the ramp or flight deck. This program directly addresses the operational requirement of Strike survivability platforms for optimization of EW/countermeasure solutions across the Department of Navy.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Technology Development	6.214	7.361	8.354	0.000	8.354
Articles:	-	-	-	-	-
FY 2021 Plans: Perform EW vulnerability studies/analysis, product development and test conducted for the Integrated Defensive Electronic Countermeasures (IDECM) ALQ-214 Dual Band Decoy (DBD) system on the F/A-18 C/D and E/F for both USMC and Navy aircraft. Develop, model and test advanced electronic countermeasure algorithms for USMC and Navy aircraft to defend against modern threats both inside and outside the currently protected RF spectrum. Contractor and Organic SWIP, ARC, and DBD modeling, simulation, and technique optimization development will commence in FY21.					
FY 2022 Base Plans: Perform EW vulnerability studies/analysis, product development and test conducted for the ALQ-214 system on the F/A-18 C/D and E/F for both USMC and Navy aircraft. Develop, model and test advanced electronic countermeasure algorithms for USMC and Navy aircraft to defend against modern threats both inside and					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3308 / *Technology Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
outside the currently protected RF spectrum. Contractor and Organic SWIP, ARC, and DBD modeling, simulation, and technique optimization development will continue in FY22. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding increase from FY 2021 to FY 2022 of $0.993M due to the continued need and ability to keep pace with current and existing threats outside currently protected RF spectrum.					
Accomplishments/Planned Programs Subtotals	6.214	7.361	8.354	0.000	8.354

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Electronic Warfare/vulnerability studies/analysis, product development and test conducted for strike aircraft across the Future Years Defense Program (FYDP).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3308 / *Technology Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Dev - ALQ-214 SW Dev	SS/CPFF	Harris : Clifton,NJ	0.545	0.000		0.000		0.000		-		0.000	-	-	-
Software Dev - ALQ-214 SW Dev	WR	NAWCWD : Point Mugu, CA	2.000	0.690	Dec 2019	0.000		0.000		-		0.000	-	-	-
Software Dev - ALQ-214 SW Dev	MIPR	Wright Patterson AFB : Dayton, OH	2.500	1.700	May 2020	1.882	Mar 2021	1.800	Mar 2022	-		1.800	-	-	-
Software Dev - ALQ-214 SW Dev	C/BA	Leidos : Arlington, VA	0.000	1.100	Jul 2020	2.573	Jul 2021	3.846	Dec 2021	-		3.846	-	-	-
		Subtotal	5.045	3.490		4.455		5.646		-		5.646	-	-	N/A

Remarks

Contractor SWIP and ARC modeling, simulation, and technique optimization development will continue through FY 2022.
Product Development includes Threat Characterization efforts continuing into FY 2022.
FY 2022 increase ($1.191M) due to the increased need for modeling, simulation and technique optimization development.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Dev - ALQ-214 SW Dev	WR	NAWCWD : Point Mugu, CA	0.000	0.979	Jan 2020	1.284	Nov 2020	0.829	Nov 2021	-		0.829	-	-	-
Software Dev - ALQ-214 SW Dev	C/CPFF	Johns Hopkins : Baltimore, MD	0.475	0.260	Jun 2020	0.000		0.300	Nov 2021	-		0.300	-	-	-
Software Dev - ALQ-214 SW Dev	C/BA	Leidos : Arlington, VA	1.000	0.000		0.000		0.000		-		0.000	-	-	-
Software Dev - ALQ-214 SW Dev	WR	NRL : Arlington, VA	0.075	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	1.550	1.239		1.284		1.129		-		1.129	-	-	N/A

Remarks

Contractor and Organic SWIP and ARC modeling, simulation, and technique optimization development will continue into FY 2022.
Increase in FY 2021 funding to MDEWSSA is to address Mission Data File (MDF) and technique updates for high priority advanced threats. FY2022 funding ($.300M) will realign back to Johns Hopkins for Threat Analysis and initial technique development.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3308 / *Technology Development*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering & Evaluation	WR	NAWCWD : Point Mugu, CA	0.000	0.000		1.622	Nov 2020	1.579	Nov 2021	-		1.579	-	-	-
Engineering & Evaluation	WR	NAWCWD : China Lake, CA	1.766	1.485	Jan 2020	0.000		0.000		-		0.000	-	-	-
		Subtotal	1.766	1.485		1.622		1.579		-		1.579	-	-	N/A

Remarks

Organic SWIP and ARC modeling, simulation, and technique optimization development will continue through FY 2022.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	8.361	6.214		7.361		8.354		-		8.354	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3308 / *Technology Development*

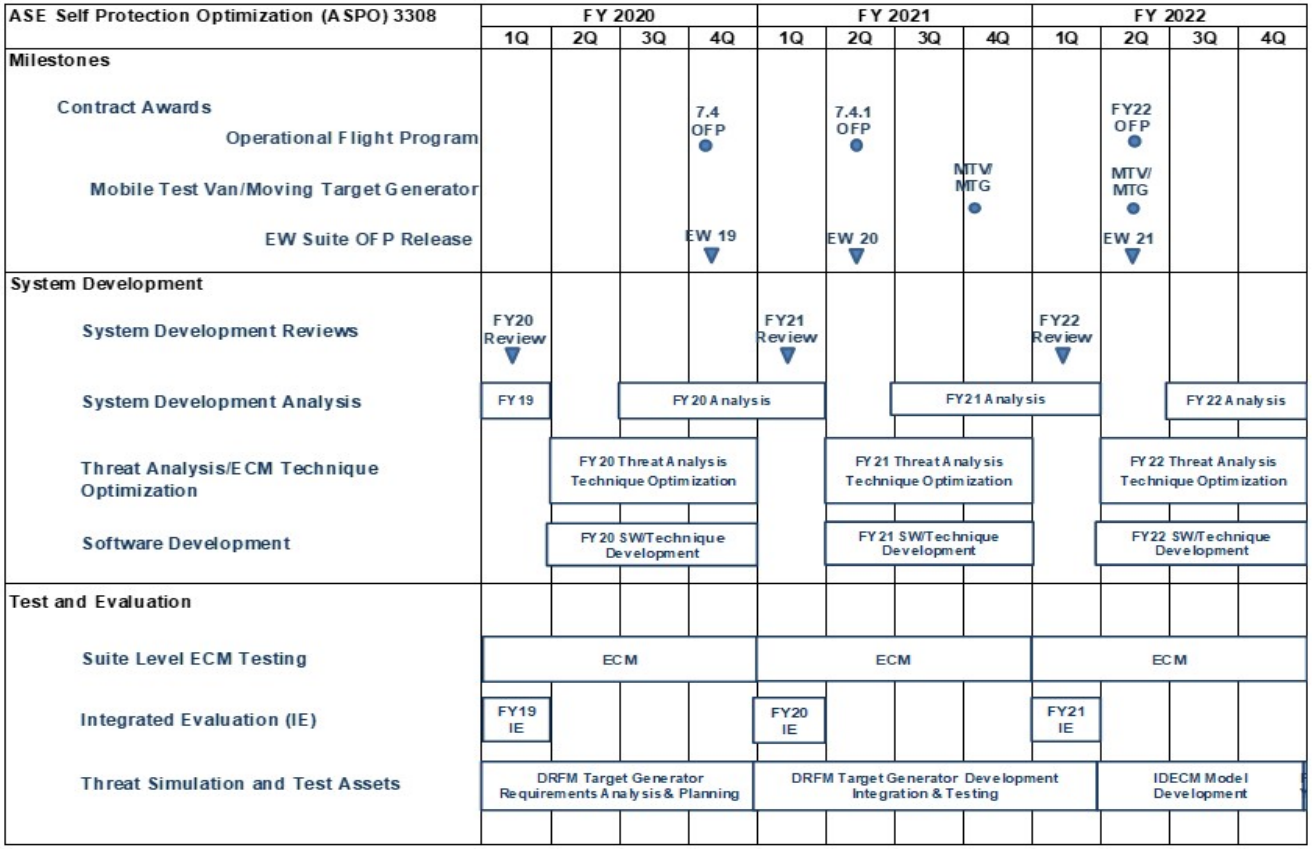


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3308 / *Technology Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
(U) ASE Self Protection Optimization (ASPO)				
Milestones: Contract Awards: FY-20 Operational Flight Program	4	2020	4	2020
Milestones: Contract Awards: FY-21 Operational Flight Program	2	2021	2	2021
Milestones: Contract Awards: FY-22 Operational Flight Program	2	2022	2	2022
Milestones: Contract Awards: FY 21 Mobile Test Van/Moving Target Generator	4	2021	4	2021
Milestones: Contract Awards: FY 22 Mobile Test Van/Moving Target Generator	2	2022	2	2022
Milestones: EW Suite OFP Release: Release-19	4	2020	4	2020
Milestones: EW Suite OFP Release: Release-20	2	2021	2	2021
Milestones: EW Suite OFP Release: Release-21	2	2022	2	2022
Systems Development: Systems Development Reviews: FY-20 Review	1	2020	1	2020
Systems Development: Systems Development Reviews: FY-21 Review	1	2021	1	2021
Systems Development: Systems Development Reviews: FY-22 Review	1	2022	1	2022
Systems Development: System Development Analysis: FY-19 Analysis	1	2020	1	2020
Systems Development: System Development Analysis: FY-20 Analysis	3	2020	1	2021
Systems Development: System Development Analysis: FY-21 Analysis	3	2021	1	2022
Systems Development: System Development Analysis: FY-22 Analysis	3	2022	4	2022
Systems Development: Threat Analysis/Technique Optimization: FY-20 Threat Analysis/Technique Optimization	2	2020	4	2020
Systems Development: Threat Analysis/Technique Optimization: FY-21 Threat Analysis/Technique Optimization	2	2021	4	2021
Systems Development: Threat Analysis/Technique Optimization: FY-22 Threat Analysis/Technique Optimization	2	2022	4	2022
Systems Development: Software Development: FY-20 SW/Technique Development	2	2020	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3308 / *Technology Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Systems Development: Software Development: FY-21 SW/Technique Development	2	2021	4	2021
Systems Development: Software Development: FY-22 SW/Technique Development	2	2022	4	2022
Test and Evaluation: Suite Level ECM Testing: FY20 ECM Testing	1	2020	4	2020
Test and Evaluation: Suite Level ECM Testing: FY21 ECM Testing	1	2021	4	2021
Test and Evaluation: Suite Level ECM Testing: FY22 ECM Testing	1	2022	4	2022
Test and Evaluation: Integrated Evaluation: FY-19 Integrated Evaluation	1	2020	1	2020
Test and Evaluation: Integrated Evaluation: FY-20 Integrated Evaluation	1	2021	1	2021
Test and Evaluation: Integrated Evaluation: FY-21 Integrated Evaluation	1	2022	1	2022
Test and Evaluation: Threat Simulation and Test Assets: Digital Radio Frequency Memory (DFRM) Target Generator Requirements Analysis & Planning	1	2020	4	2020
Test and Evaluation: Threat Simulation and Test Assets: DFRM Target Generator Development Integration and Testing	4	2020	1	2022
Test and Evaluation: Threat Simulation and Test Assets: IDECM Model Development	2	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 3309 / *Assault Survivability Optimization*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3309: *Assault Survivability Optimization*	5.165	6.896	0.828	23.395	-	23.395	-	-	-	-	-	-
Quantity of RDT&E Articles	480	-	-	2,520	-	2,520	-	-	-	-		

A. Mission Description and Budget Item Justification

FY 2022 includes funding required to implement Common Carriage for DoN aircraft platforms. Program develops solutions to aircraft survivability gaps against current and future threat systems. Solutions address the Air Expendable Countermeasures (AECM) requirement for maintaining a portfolio of countermeasures capable of defeating current and advancing surface-to-air and air-to-air threat missile systems to include the development, testing, and rapid fielding of advanced countermeasures and enhanced employment techniques needed to support fleet combat operations. Countermeasure dispensing techniques are developed using capability advancements tied to integrated Aircraft Survivability Equipment (iASE) investments by leveraging available sensor data in the iASE Suite. Improved countermeasure dispense techniques are rapidly delivered to operational Fleet aircraft through Mission Data File updates via established software update processes. New expendable countermeasure technology developed in industry, by other DoD Components and through other R&D programs can be transitioned to AECM Program of Record to meet the required operational platform survivability without further investment in iASE systems. This Project also includes/enables survivability solutions using existing iASE data which improves situational awareness for own-ship, wingman, and distributed command and control. Resources will be applied to the following areas: 1) Studies and evaluations to optimize employment of current countermeasures and iASE capabilities. 2) Development and demonstration of advanced expendable countermeasures and countermeasure techniques. 3) Testing and evaluation of advanced countermeasures. 4) Development of system software enhancements and integration for the testing and deployment of advanced countermeasure techniques. 5) Development of and upgrades to modeling tools and specialized equipment required to conduct evaluation of advanced countermeasures against proliferating threats.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Assault Survivability Optimization	6.896	0.828	23.395	0.000	23.395
Articles:	-	-	2,520	-	2,520
FY 2021 Plans: Continue development and testing of advanced countermeasure techniques against advancing threat systems. Perform modeling and simulation to support effectiveness flight testing to optimize expendable countermeasure effectiveness and expand applicability of 1x1x8 countermeasures on MH-60S against ground to air threats.					
FY 2022 Base Plans: Award development contract for ALE-47 Common Carriage Engineering, Manufacturing Development hardware, software and support equipment design and development effort including associated Government efforts. Support the development and integration of the advanced AN/ALE-47 iASE capability to improve countermeasure techniques developed for improved survivability and aircrew situational awareness. Continue					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3309 / *Assault Survivability Optimization*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
development and testing of advanced countermeasure techniques. Perform modeling and simulation to support effectiveness testing of new 1x1x8 advanced countermeasure flares for F/A-18E/F and MH-60R/S. Continue development of advanced countermeasures to defeat emerging threats focused on 1x1x8 countermeasures to support transition of Common Carriage. Breakdown of test assets follows: ALE-47 Systems 20ea MJU-61 500ea MJU-76 500ea MJU-78 500ea Chaff 1,000ea ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase from FY 2021 to FY 2022 includes $22.567M to award the EMD contract to re-design and upgrade hardware and software solutions for the ALE-47 Countermeasure Dispensing Systems for DoN aircraft required to standardize countermeasures across Services and increase capability/lethality/survivability; increase countermeasure carriage to support operations in contested environments, extend mission time-on-target and reduces logistics footprint during Fleet deployment and operations.					
Accomplishments/Planned Programs Subtotals	6.896	0.828	23.395	0.000	23.395

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PANMC/0182: *Air Expendable Countermeasures*	0.000	0.000	4.150	-	4.150	-	-	-	-	-	-

Remarks

PANMC 0182 Air Expendables Countermeasures (CM) Common Carriage funding represents only a portion of the total PANMC 0182 Air Expendables CM Budget.

D. Acquisition Strategy

Acquisition strategy is to leverage improvements in air expendable countermeasures technology and integration of existing iASE sensor data to enhance platform survivability on USN and USMC platforms through more effective dispense techniques, investing in enhancements in modeling and simulation tools to better evaluate

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3309 / *Assault Survivability Optimization*

countermeasure effectiveness against advancing threat systems, upgrading test and evaluation equipment to incorporate current and future threats for effectiveness tests, and developing and demonstrating advanced concept countermeasures for future threats. New advanced countermeasures are then transitioned to the Procurement of Ammunition Navy and Marine Corps appropriation for procurement and fielding. New optimized and advanced countermeasure techniques are delivered via operational Mission Data Files (MDF) to increase aircraft/aircrew survivability. F-35 brings square countermeasures to Fleet operations and provides the opportunity to drastically improve interoperability across USN/USMC, DoD and Coalition warfare operations by employing a Common Carriage solution programmed to start Engineering and Manufacturing Development for DoN Aircraft in FY 2022 for IOC in FY 2026. Common Carriage will standardize countermeasures across Services to increase capability/lethality/survivability and countermeasure load-out to support operations in contested environments.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 3309 / *Assault Survivability Optimization*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Expendable Countermeasure Technique Modeling and Simulation	WR	NSWC Crane : Crane, IN	1.665	0.406	Oct 2019	0.414	Oct 2020	0.740	Oct 2021	-		0.740	-	-	-
UH-1Y and MV-22 Expendable Countermeasure Technique Modeling and Simulation	WR	NSWC Crane : Crane, IN	0.000	0.282	Oct 2019	0.000		0.000		-		0.000	-	-	-
UH-1Y and MV-22 RFCM Modeling and Simulation	WR	NSWC Crane : Crane, IN	0.000	0.165	Oct 2019	0.000		0.000		-		0.000	-	-	-
RFCM Modeling and Simulation	C/CPFF	Booz Allen Hamilton : McClean, VA	0.000	0.101	Dec 2019	0.000		0.000		-		0.000	-	-	-
RFCM Modeling and Simulation	WR	Toyon Research Corp. : Goleta, CA	0.000	0.125	Apr 2021	0.000		0.000		-		0.000	-	-	-
ALE-47 Common Carriage System Upgrade Development	C/CPFF	TBD : TBD	0.000	0.000		0.000		9.193	Dec 2021	-		9.193	-	-	-
ALE-47 Software Upgrades	WR	FRCSE : Jacksonville, FL	0.000	0.000		0.000		1.061	Jan 2022	-		1.061	-	-	-
ALE-47 Common Carriage System Upgrade Development	WR	NSWC Crane : Crane, IN	0.000	0.000		0.000		2.679	Oct 2021	-		2.679	-	-	-
ALE-47 Common Carriage System Upgrade Development	WR	FRCSE : Jacksonville, FL	0.000	0.000		0.000		1.947	Oct 2021	-		1.947	-	-	-
ALE-47 A-Kit Design	WR	FRCSE : Jacksonville, FL	0.000	0.000		0.000		0.374	Jan 2022	-		0.374	-	-	-
Archive Product Development Efforts	Various	Various : Various	0.837	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	2.502	1.079		0.414		15.994		-		15.994	-	-	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3309 / *Assault Survivability Optimization*

Product Development ($ in Millions)

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

Remarks

FY 2022 $15.994M to award Engineering, Manufacturing and Development contract to design and develop hardware and software solutions for DoN aircraft Countermeasure Dispensing Systems and perform and modeling and simulation to optimize Common Carriage countermeasures on DoN aircraft platforms.

FY 2021 modeling and simulation for the development of advanced countermeasure techniques prior to ground to air flight test for MH-60S using 1X1X8 advanced countermeasures. FY 2022 modeling and simulation for F/A-18E/F and MH-60R/S for the development of advanced countermeasure techniques prior flight test using 1X1X8 Common Carriage advanced IR countermeasures. FY 2022 Product Development includes ALE-47 Common Carriage dispenser, sequencer and support equipment design and development to incorporate and dispense square form factor countermeasures. ALE-47 Common Carriage System Upgrade Development contract includes 20 ALE-47 Test Articles.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Mission Data File Software Development	WR	FRCSE : Jacksonville, FL	0.381	0.072	Dec 2019	0.073	Nov 2020	0.303	Jan 2022	-		0.303	-	-	-
AH-1Z/UH-1Y and MV-22 Test Mission Data File Software Development	WR	FRCSE : Jacksonville, FL	0.000	0.144	Jan 2020	0.000		0.000		-		0.000	-	-	-
ALE-47 Technical Support	WR	FRC : Various	0.000	0.000		0.000		0.418	Dec 2021	-		0.418	-	-	-
		Subtotal	0.381	0.216		0.073		0.721		-		0.721	-	-	N/A

Remarks

FY 2022 $0.721M for support for ALE-47 Countermeasure Dispensing Systems software design and development to incorporate and dispense square form factor countermeasures on DoN aircraft platforms to optimize Common Carriage countermeasures.

FY 2020 operational MDF cost reduced and re-aligned to flight test based on fleet need. FY 2021 software development funding support the creation of test mission data file for MH-60S using 1X1X8 advanced countermeasures for dispense techniques optimization test flights. FY 2022 software development for F/A-18E/F and MH-60R/S test MDFs.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 3309 / *Assault Survivability Optimization*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental T&E Flight Tests	WR	Various : Various	0.912	0.000		0.294	Dec 2020	0.000		-		0.000	-	-	-
UH-1Y and MV-22 Developmental T&E Flight Tests	WR	Various : Various	0.000	0.847	Mar 2020	0.000		0.000		-		0.000	-	-	-
Advanced Countermeasures Development	WR	NSWC Crane : Crane, IN	0.000	0.500	Oct 2019	0.000		0.000		-		0.000	-	-	-
Advanced Countermeasures Development	SS/FFP	Elbit Systems LTD : Isreal	0.000	0.125	Apr 2020	0.000		0.000		-		0.000	-	-	-
Engineering and Evaluation for 1X1X8 Dispenser Hardware and Test Fixtures	Various	Various : Various	0.000	0.259	Jan 2020	0.000		0.000		-		0.000	-	-	-
Threat Analysis and Characterization and Signature Measurement Capability for Seeker Test Van Capability Upgrades	MIPR	SAIC : Reston, VA	0.000	1.107	Nov 2019	0.000		0.000		-		0.000	-	-	-
Advance Threat Simulator	WR	NSWC Crane : Crane, IN	0.000	0.288	Oct 2019	0.000		0.000		-		0.000	-	-	-
Capability Upgrades for Tiger Pod Infrared Measurement, AICES Pod and Mongoose Pod	WR	NAWCWD : Pt Mugu, CA	0.000	0.703	Oct 2019	0.000		0.000		-		0.000	-	-	-
ALE-47 Common Carriage Engineering	WR	FRCSE : Jacksonville, FL	0.000	0.000		0.000		1.152	Oct 2021	-		1.152	-	-	-
AECM Common Carriage Engineering	WR	FRCSE : Jacksonville, FL	0.000	0.000		0.000		0.254	Oct 2021	-		0.254	-	-	-
Aircraft Qualification Planning	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.159	Mar 2022	-		0.159	-	-	-
AECM Qualification Test Units	C/FFP	Various : Various	0.000	0.000		0.000		0.339	Feb 2022	-		0.339	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3309 / *Assault Survivability Optimization*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
F/A-18E/F Air to Air Flight Test	WR	NAWCWD : Pt Mugu, CA	0.000	1.166	Dec 2019	0.000		1.343	Jan 2022	-		1.343	-	-	-
F/A-18E/F Grd to Air Flight Test	WR	NAWCWD : Pt Mugu, CA	0.000	0.000		0.000		1.441	Mar 2022	-		1.441	-	-	-
MH-60R/S Flight Test	WR	TBD : TBD	0.000	0.000		0.000		1.264	Jan 2022	-		1.264	-	-	-
Archive Prior Year Test and Evaluation Efforts	Various	Various : Various	1.168	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	2.080	4.995		0.294		5.952		-		5.952	-	-	N/A

Remarks

FY 2022 $5.952M for Test and Evaluation (T&E) for advanced Common Carriage countermeasure dispense technique optimization flight test events: F/A-18E/F (air-to-air and ground-to-air), MH-60R and MH-60S (ground-to-air).

FY 2020 developmental T&E flight tests funding consolidated to F/A-18E/F air-to-air test line item and increased from previous submission due to range cost and additional test runs. FY 2021 developmental flight test following modeling and simulation will optimize expendable countermeasure effectiveness and determine applicability of 1x1x8 countermeasures on MH-60S against ground to air threats. FY 2022 developmental flight test following modeling and simulation will optimize Infrared (IR) expendable countermeasure effectiveness for F/A-18E/F and MH-60R/S. AECM qualification Test Units are 1X1X8 expendable countermeasures test articles for optimization test flights and consist of 500ea MJU-61, 500ea MJU-76, 500ea MJU-78 and 1,000ea Chaff.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management	WR	FRCSE : Jacksonville, FL	0.202	0.135	Feb 2020	0.047	Oct 2020	0.728	Oct 2021	-		0.728	-	-	-
UH-1Y and MV-22 Advanced Countermeasure Dispense Technique Development Project Management	WR	FRCSE : Jacksonville, FL	0.000	0.102	Oct 2019	0.000		0.000		-		0.000	-	-	-
Advanced Countermeasure Dispense Technique Development Project Management	C/CPFF	Georgia Tech Applied Research Corporation : Atlanta, GA	0.000	0.132	Dec 2019	0.000		0.000		-		0.000	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3309 / *Assault Survivability Optimization*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USMC Common Carriage Survey and Evaluation Study	WR	Various : Various	0.000	0.237	Oct 2019	0.000		0.000		-		0.000	-	-	-
		Subtotal	0.202	0.606		0.047		0.728		-		0.728	-	-	N/A

Remarks

FY 2022 $0.728M for Air Expendable Countermeasures (AECM) and ALE-47 project management for Common Carriage dispenser system re-design and countermeasure technique optimization flight test events.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.165	6.896		0.828		23.395		-		23.395	-	-	N/A

Remarks

FY 2022 $23.395M to award ALE-47 development contract and associated organic engineering, logistic, test and project management efforts to implement ALE-47 Common Carriage solution and optimize square form factor countermeasures.

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3309 / *Assault Survivability Optimization*

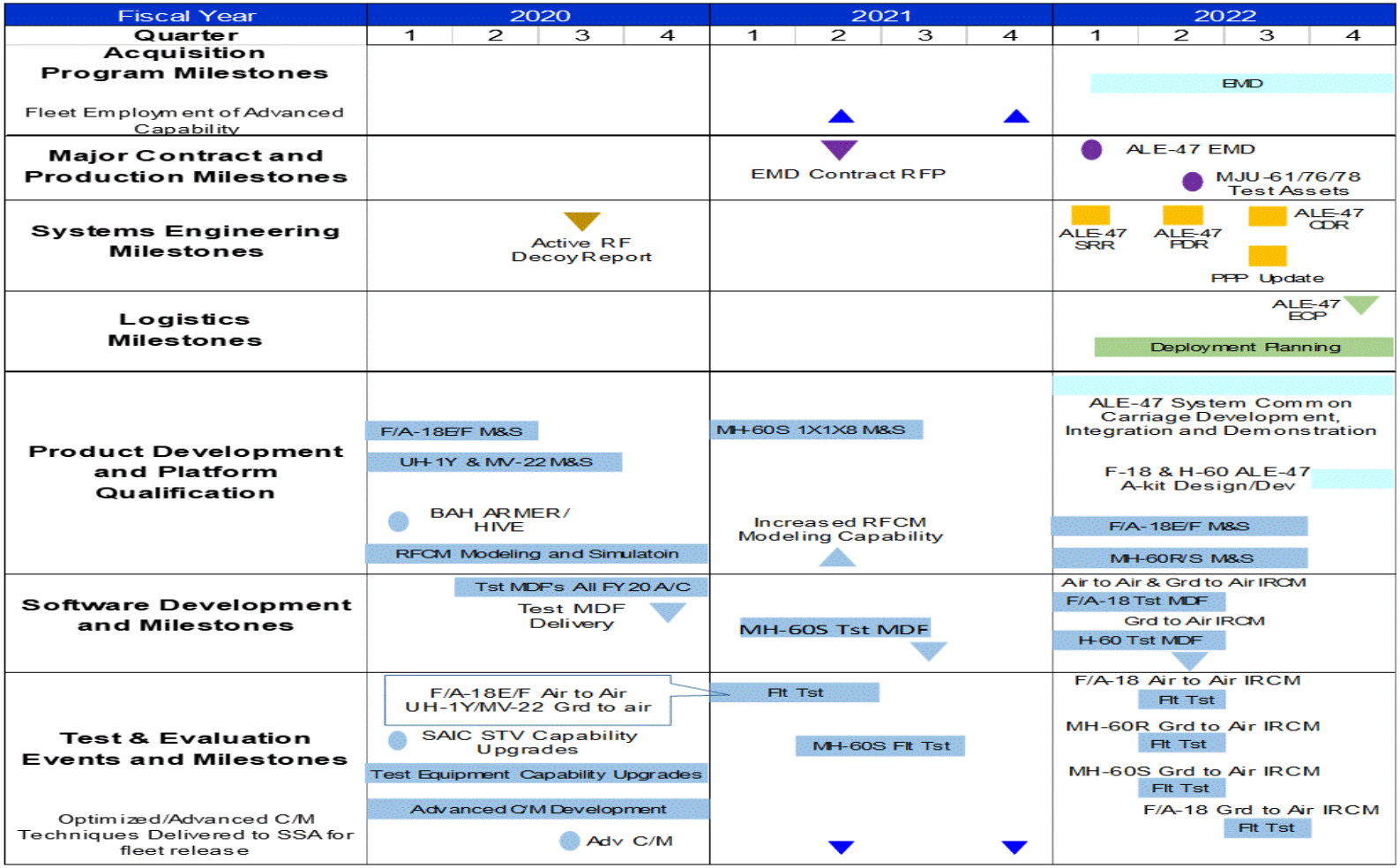


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3309 / *Assault Survivability Optimization*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Assault Survivability Optimization				
Acquisition Program and Major Contract Milestones: FY20 Fleet Employment of Advanced Capability	2	2021	2	2021
Acquisition Program and Major Contract Milestones: FY21 Fleet Employment of Advanced Capability	4	2021	4	2021
Acquisition Program and Major Contract Milestones: ALE-47 System Engineering and Manufacturing Development (EMD) Award	1	2022	1	2022
Acquisition Program and Major Contract Milestones: MJU-61/76/78 Test Assets Award	2	2022	2	2022
Systems Engineering Milestones: RFCM Modeling and Simulation for active radio frequency decoy report	3	2020	3	2020
Systems Engineering Milestones: ALE-47 System Requirements Review (SRR)	1	2022	1	2022
Systems Engineering Milestones: ALE-47 Preliminary Design Review (PDR)	2	2022	2	2022
Systems Engineering Milestones: ALE-47 Program Protection Plan Update (PPP)	3	2022	3	2022
Systems Engineering Milestones: ALE-47 Crititcal Design Review (CDR)	3	2022	3	2022
Logistics Milestones: ALE-47 Engineering Change Proposal (ECP)	4	2022	4	2022
Product Development and Platform Qualification: BAH ARMER/HIVE Contract Award	1	2020	1	2020
Product Development and Platform Qualification: Increased RFCM Modeling Capability	2	2021	2	2021
Software Development And Milestones: FY20 Test Mission Data Files	4	2020	4	2020
Software Development And Milestones: FY21 Test Mission Data Files	3	2021	3	2021
Software Development And Milestones: FY22 Test Mission Data Files	2	2022	2	2022
Test and Evaluation Events and Milestones: Test Equipment Capability Upgrades Contract Award	1	2020	1	2020
Test and Evaluation Events and Milestones: Advance Countermeasure Engineering and Evaluation Contract	3	2020	3	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Test and Evaluation Events and Milestones: FY20 F/A-18E/F Flight Test	1	2021	2	2021
Test and Evaluation Events and Milestones: FY20 UH-1Y and MV-22 Flight Test	1	2021	1	2021
Test and Evaluation Events and Milestones: FY21 Flight Test	2	2021	3	2021
Test and Evaluation Events and Milestones: FY22 Flight Test F/A-18 Air to Air IRCM	2	2022	2	2022
Test and Evaluation Events and Milestones: FY22 Flight Test MH-60R/S Grd to Air IRCM	2	2022	2	2022
Test and Evaluation Events and Milestones: FY22 Flight Test F/A-18 Grd to Air IRCM	3	2022	3	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 3327 / *MAGTF EW Aviation Development*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3327: *MAGTF EW Aviation Development*	51.960	7.641	9.896	12.026	-	12.026	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project unit supports the United States Marine Corps (USMC) development of Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) and the various elements of its distributed System of Systems (SoS). The SoS addresses MAGTF EW sufficiency gaps in the areas of Electronic Attack (EA), EW Support (ES), and Electronic Protection with a multitude of payloads designed for carriage on a variety of organic MAGTF air assets. Payload development plans follow an adaptable, modular and open architecture philosophy to combat the increasing capability gap and enable future growth at a reduced operational and sustainment cost. A key element to this capability is the AN/ALQ-231(V) Intrepid Tiger II program.

The AN/ALQ-231(V)1 pod is the variant of the Intrepid Tiger II pod flown on the AV-8B, F/A-18A-D, and KC-130J platforms. The AN/ALQ-231(V)3 is the variant of the Intrepid Tiger II pod flown on the UH-1Y platform, with plans for future integration on AH-1 platforms. Plans include future integration of AN/ALQ-231(V) Block X advanced capability and counter-radar upgrades on USMC tilt rotor, fixed wing, rotary wing and unmanned aircraft. The AN/ALQ-231(V)4 is the first implementation of Block X upgrades on MV-22B aircraft. All payload variants are capable of conducting, supporting, and coordinating Electro-Magnetic Spectrum (EMS) operations in the form of EA and ES against Irregular Warfare threats. Additionally, all payloads are scalable and adaptable for emerging threats and are interoperable with the USMC's Electronic Warfare Services Architecture (EWSA). The Intrepid Tiger II capability is design to be integrated for MAGTF tactical coordination of cyberspace and EW operations via the Cyber Electronic Warfare Coordination Cell (CEWCC).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Intrepid Tiger II (AN/ALQ-231)	5.039	9.896	12.026	0.000	12.026
Articles:	-	-	-	-	-
Description: The program will develop, mature, and test Intrepid Tiger II based solutions to radar threats in support of the penetrating jammer mission with plans to release variants of the AN/ALQ-231(V) BLK X Radar Jammer for use on the MV-22, AV-8B, and F/A-18C/D platforms, as well as for future use on the C-130 and other USMC fixed wing, rotary wing, and unmanned aircraft.					
FY 2021 Plans: FY 2021 efforts include development of the BLK X design for a modular pod shell. Correction of Development Test (DT) deficiencies AN/ALQ-231 (V)4 payload will complete. In addition, Lab testing and initial DT of the BLK					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
X payload for KC-130J will commence. Continue development of the EWSA in support of the evolving Intrepid Tiger II target sets and missions. ***FY 2022 Base Plans:*** FY 2022 efforts include completion and final reporting on Operational Test (OT) of AN/ALQ-231(V)4 payload on MV-22B. Additionally, Developmental Testing of both hardware and software for the payload variant of BLK X on KC-130J will commence. Continued development of the EWSA in support of evolving Intrepid Tiger II target sets and missions. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding increases from FY 2021 to FY 2022 as AN/ALQ-231 (V)4 executes OT&E, and BLK X payload on KC-130J developmental efforts increase and DT commences.					
Title: MAGTF EW Jammer Techniques Development	2.602	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A ***FY 2022 Base Plans:*** N/A ***FY 2022 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	7.641	9.896	12.026	0.000	12.026

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• APN/0587: *MAGTF EW For Aviation*	26.536	26.822	29.151	-	29.151	-	-	-	-	-	-

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

D. Acquisition Strategy

This project unit is part of USMC led efforts to ensure Marine Corps requirements are included in the budget process for the Future Year Defense Program and beyond. These efforts include AN/ALQ-231(V) Intrepid Tiger II Family of Systems, Collaborative Electronic Warfare (EW)/EW Battle Management, and EW Service Architecture (EWSA). These programs are the Marine Corps' initial steps to create systems to distribute EW capability across the battlespace.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 3327 / *MAGTF EW Aviation Development*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Intrepid Tiger BLK X Hardware Development	WR	NAWCWD : Point Mugu, CA	15.823	0.000	Nov 2019	2.391	Nov 2020	0.785	Nov 2021	-		0.785	-	-	-
Systems Engineering	WR	NAWCAD : Patuxent River, MD	2.570	1.343	Nov 2019	0.514	Nov 2020	1.200	Nov 2021	-		1.200	-	-	-
Systems Engineering	WR	NAWCWD : Point Mugu, CA	26.029	4.166	Nov 2019	4.258	Nov 2020	4.243	Nov 2021	-		4.243	-	-	-
Prior Year Prod Dev no longer funded in FYDP	Various	Various : Various	0.007	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	44.429	5.509		7.163		6.228		-		6.228	-	-	N/A

Remarks

Funding decreases from FY 2021 to FY 2022 as AN/ALQ-231(V)4 development efforts conclude in FY 2021, and the program continues the BLK X payload on the KC-130J development efforts.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Eng & Tech Services	Various	Various : Various	1.007	0.396	Nov 2019	0.234	Nov 2020	0.239	Nov 2021	-		0.239	-	-	-
Prior year Support no longer funded in FYDP	Various	Various : Various	0.430	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	1.437	0.396		0.234		0.239		-		0.239	-	-	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Intrepid Tiger BLK X Testing	WR	NAWCAD : Patuxent River, MD	1.062	0.603	Nov 2019	1.725	Nov 2020	1.500	Nov 2021	-		1.500	-	-	-
Intrepid Tiger BLK X Testing	WR	NAWCWD : Point Mugu, CA	4.653	1.098	Nov 2019	0.722	Nov 2020	2.321	Nov 2021	-		2.321	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Intrepid Tiger BLK X Testing	Various	Various : Various	0.347	0.017	Nov 2019	0.020	Nov 2020	1.700	Nov 2021	-		1.700	-	-	-
		Subtotal	6.062	1.718		2.467		5.521		-		5.521	-	-	N/A

Remarks

Funding increases from FY 2021 to FY 2022 as program executes AN/ALQ-231(V)4 OT&E and begins BLK X payload on the KC-130J developmental testing.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Various	Various : Various	0.032	0.018	Oct 2019	0.032	Oct 2020	0.038	Oct 2021	-		0.038	-	-	-
		Subtotal	0.032	0.018		0.032		0.038		-		0.038	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	51.960	7.641		9.896		12.026		-		12.026	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

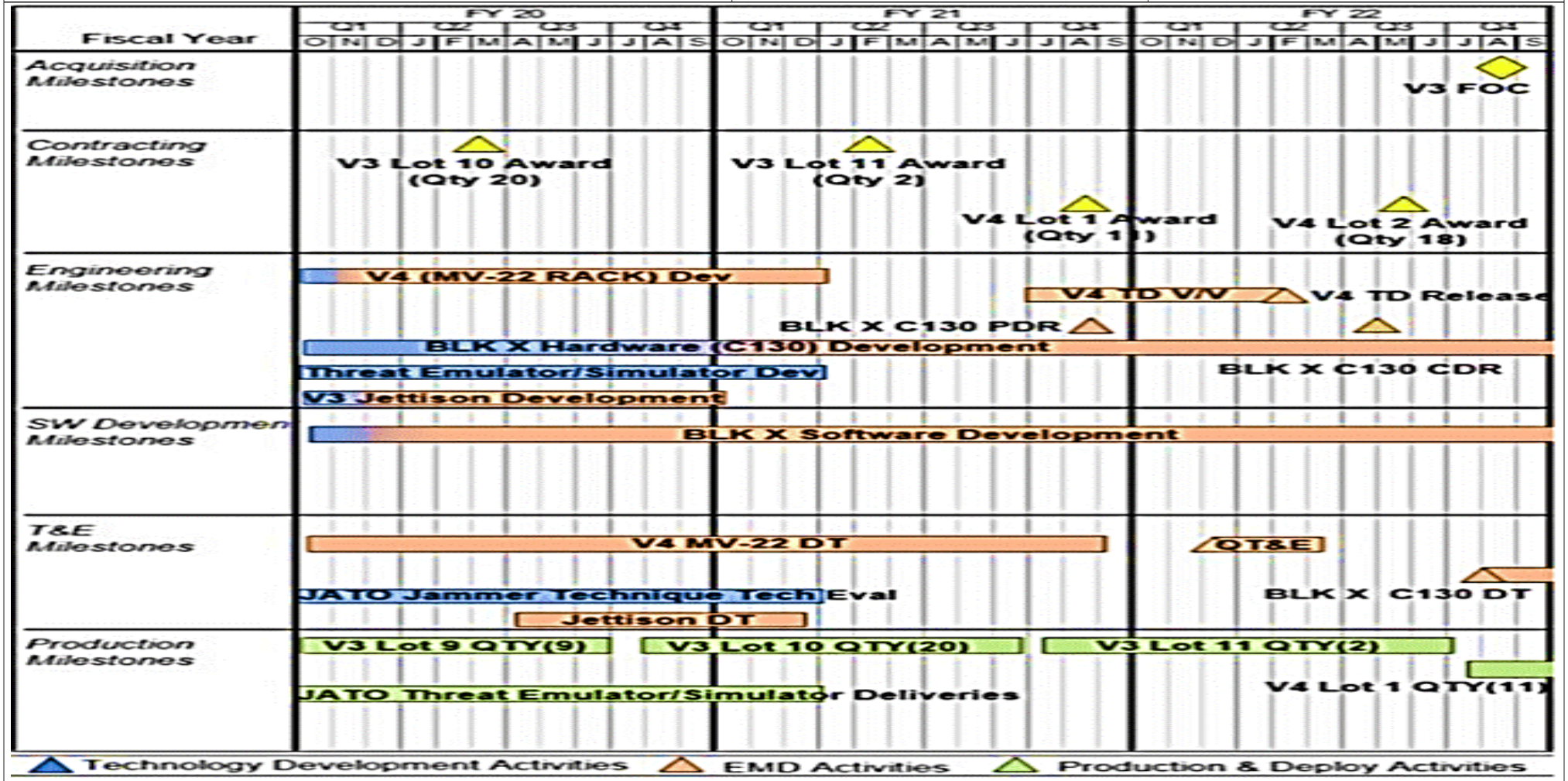


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Intrepid Tiger II (AN/ALQ-231)				
Engineering Milestones: AN/ALQ-231(V)4 TD Fleet Release	2	2022	2	2022
Systems Development: AN/ALQ-231(V)1 BLK X C-130 Hardware Development	1	2020	4	2022
Systems Development: AN/ALQ-231(V)1 BLK X Software Development	1	2020	4	2022
Test & Evaluation: AN/ALQ-231(V)4 MV-22 Developmental Test	1	2020	4	2021
Test & Evaluation: AN/ALQ-231(V)4 OT&E	1	2022	2	2022
Test & Evaluation: AN/ALQ-231(V)1 BLK X C-130 Developmental Test	4	2022	4	2022
Production Milestones				
AN/ALQ-231(V)3 Production Lot 10 (Qty 20)	2	2020	2	2020
AN/ALQ-231(V)3 Production Lot 11 (Qty 2)	2	2021	2	2021
AN/ALQ-231(V)4 Production Lot 1 (Qty 11)	4	2021	4	2021
AN/ALQ-231(V)4 Production Lot 2 (Qty 18)	3	2022	3	2022
Deliveries: AN/ALQ-231(V)3 Lot 9 Deliveries (Qty 9)	1	2020	3	2020
Deliveries: AN/ALQ-231(V)3 Lot 10 Deliveries (Qty 20)	4	2020	3	2021
Deliveries: AN/ALQ-231(V)3 Lot 11 Deliveries (Qty 2)	4	2021	3	2022
Deliveries: AN/ALQ-231(V)4 Lot 1 Deliveries (Qty 11)	4	2022	4	2022
MAGTF EW Jammer Techniques Development				
Systems Development: Threat Emulator / Simulator Development	1	2020	1	2021
Test & Evaluation: Jammer Techniques Technical Evaluation	1	2020	1	2021
Deliveries: Threat Emulator / Simulator Delivery	1	2020	1	2021

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 3371 / *MAGTF EW Interoperability Development*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3371: *MAGTF EW Interoperability Development*	3.590	0.455	1.189	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project unit supports the United States Marine Corps air-ground interoperability by providing a variety of capabilities through multiple functions of the Software Reprogrammable Payload (SRP) when installed aboard SRP-capable aircraft. The spiral development plans allow adaptable, scalable, and open architecture philosophy to reduce stove-pipe solutions but enable future growth at a reduced operational and sustainment cost.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Software Reprogrammable Payload	0.455	1.189	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: Continue SRP support of a government-owned reference design for a flexible, in-operational reconfigurable software radio designed to meet current and future needs. Support the air-ground interoperability by providing a variety of capabilities through multiple functions of the Software Reprogrammable Payload when installed aboard SRP-capable aircraft. Continue the development of the reduced form factor SRP for the identified platforms that can not support the Spiral 2 form factor. Continue transition support of Spiral 2 to Program of Record and Request for Proposal package.					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: The decrease from FY21 to FY22 is due to the NAVAIR Mission Aligned Organization realignment and the Marine Air Ground Task Force funds starting in FY22 through FY26 were realigned to PE 0605217N PU 0572.					
Accomplishments/Planned Programs Subtotals	0.455	1.189	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3371 / *MAGTF EW Interoperability Development*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This project unit is part of United States Marine Corps led efforts to ensure Marine Corps requirements are included in the budget process for the Future Year Defense Program and beyond. This effort is for the Software Reprogrammable Payload. This program is part of the Marine Corps initial steps to create a common interoperable system to distribute multiple data types across the battle-space through spiral development.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3371 / *MAGTF EW Interoperability Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCAD : Patuxent River, MD	1.478	0.243	Nov 2019	0.425	Nov 2020	0.000		-		0.000	-	-	-
Systems Engineering	WR	NRL : Washington, DC	0.509	0.000		0.225	Dec 2020	0.000		-		0.000	-	-	-
Systems Engineering	C/CPFF	Assurance Technology Corp : Carlisle, MA	1.154	0.000		0.241	Dec 2020	0.000		-		0.000	-	-	-
Systems Engineering	C/CPFF	DCS : Alexandria, VA	0.449	0.212	Nov 2019	0.298	Nov 2020	0.000		-		0.000	-	-	-
		Subtotal	3.590	0.455		1.189		0.000		-		0.000	-	-	N/A

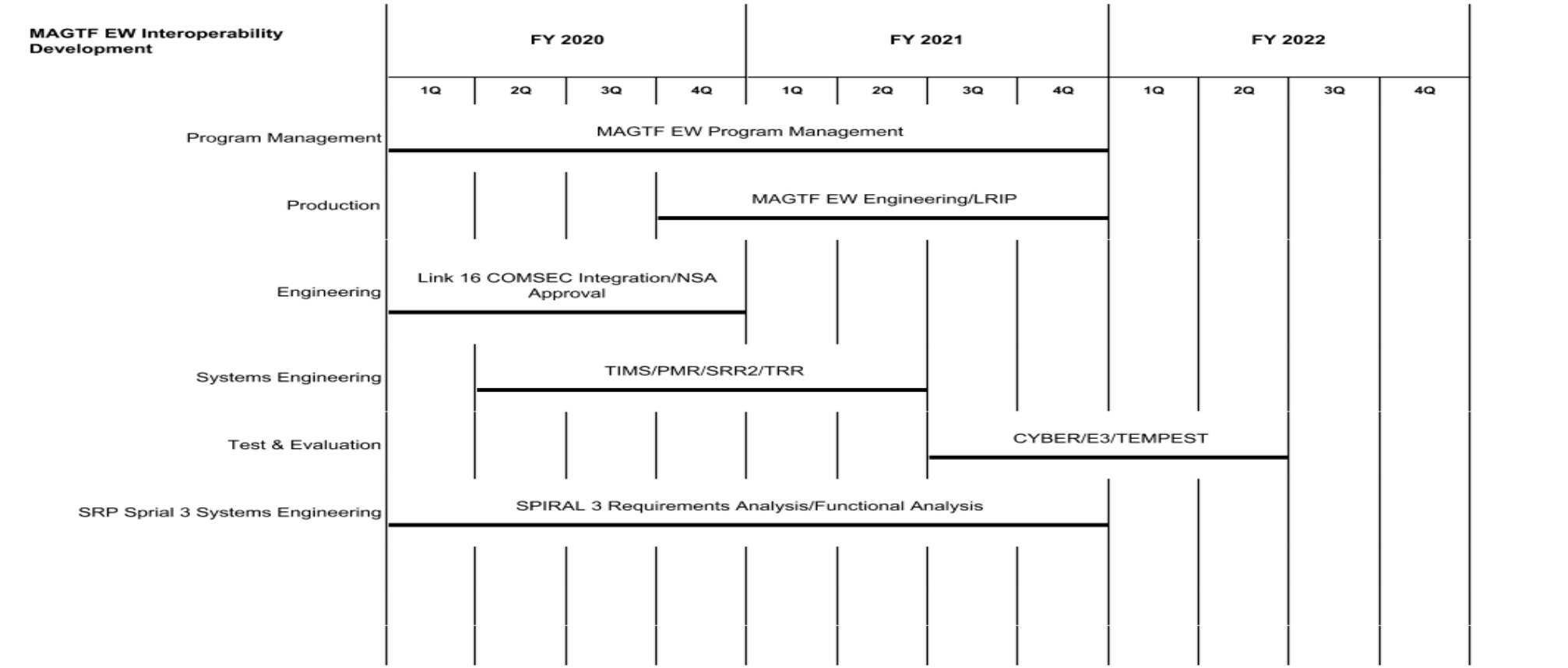
Remarks

FY22 decrease of -1.189 is due to the NAVAIR Mission Aligned Organization realignment and the Marine Air Ground Task Force funds were realigned to PE 0605217N PU 0572.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	3.590	0.455		1.189		0.000		-		0.000	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3371 / *MAGTF EW Interoperability Development*



2022PB - 0604270N - 3371

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3371 / *MAGTF EW Interoperability Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
MAGTF EW Interoperability Development				
Program Management: MAGTF EW Program Management	1	2020	4	2021
Production: MAGTF EW Engineering/LRIP	4	2020	4	2021
Engineering: Link 16 COMSEC Integration/NSA Approval	1	2020	4	2020
Systems Engineering: TIMS/PMR/SRR2/TRR	2	2020	2	2021
Test & Evaluation: CYBER/E3/TEMPEST	3	2021	2	2022
SRP Sprial 3 Systems Engineering: SPIRAL 3 Requirements Analysis/Functional Analysis	1	2020	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604270N / *Electronic Warfare (EW) Dev*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	0.000	11.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Congressional Add project unit C622 supports the United States Marine Corps (USMC) Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) AN/ ALQ-231(V) Intrepid Tiger II (IT II) efforts in the following areas:
1)Development of the Electronic Warfare Services Architecture (EWSA) to accelerate the development of a secure, extensible data exchange and hardware protocol to connect IT II payloads with other Signal Intelligence (SIGINT) systems, and facilitate integration of IT II with the Marine Corps Enterprise Network (MCEN).
2)Transition and integration of advanced digital payload EW technology developed by Office of Naval Research (ONR) Future Naval Capabilities (FNC) into IT II payloads to enhance organic cyberspace operations and EW capabilities to disrupt/deny/destroy adversary systems.
3)Investigate and model state-of-the-art jamming techniques and tactics for use on IT II payloads to keep pace with evolving and migrating EW threats on the battlefield.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021
Congressional Add: Intrepid Tiger II	0.000	11.000
FY 2020 Accomplishments: N/A		
FY 2021 Plans: 1)Development of the Electronic Warfare Services Architecture (EWSA) to accelerate the development of a secure, extensible data exchange and hardware protocol to connect IT II payloads with other Signal Intelligence (SIGINT) systems, and facilitate integration of IT II with the Marine Corps Enterprise Network (MCEN). 2)Transition and integration of advanced digital payload EW technology developed by Office of Naval Research (ONR) Future Naval Capabilities (FNC) into IT II payloads to enhance organic cyberspace operations and EW capabilities to disrupt/deny/destroy adversary systems. 3)Investigate and model state-of-the-art jamming techniques and tactics for use on IT II payloads to keep pace with evolving and migrating EW threats on the battlefield.		
Congressional Adds Subtotals	0.000	11.000

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 9999 / *Congressional Adds*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

Congressional Add project unit C622 funds the development of Electronic Warfare Services Architecture (EWSA), the transition/integration of advanced digital payloads into the IT II system, and IT II related jammer technique development efforts.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 9999 / *Congressional Adds*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development EWSA	WR	NAWCWD : Point Mugu, CA	0.000	0.000		5.500	Mar 2021	0.000		-		0.000	-	-	-
Primary Hardware Development AEA	WR	NAWCWD : Point Mugu, CA	0.000	0.000		3.000	Mar 2021	0.000		-		0.000	-	-	-
Primary Hardware Development Jammer Techniques	WR	NAWCWD : Point Mugu, CA	0.000	0.000		2.500	Mar 2021	0.000		-		0.000	-	-	-
		Subtotal	0.000	0.000		11.000		0.000		-		0.000	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		11.000		0.000		-		0.000	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 9999 / *Congressional Adds*

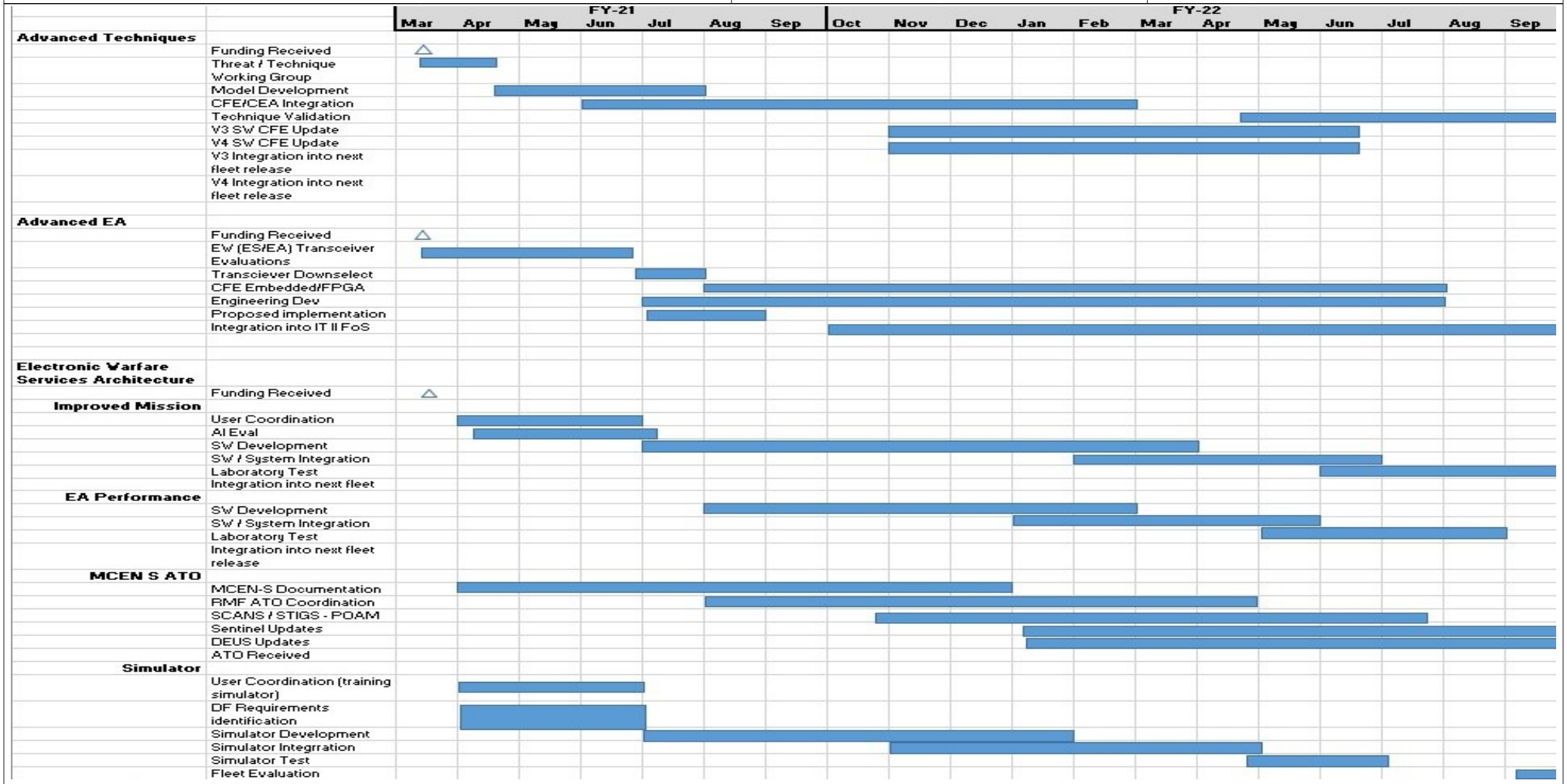


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Intrepid Tiger II Congressional Add				
Advanced Jammer Techniques: Funding Recieved	2	2021	2	2021
Advanced Jammer Techniques: Group	2	2021	3	2021
Advanced Jammer Techniques: Model Development	3	2021	4	2021
Advanced Jammer Techniques: CFE/CEA Integration	3	2021	2	2022
Advanced Jammer Techniques: Technique Validation V3/V4	3	2022	4	2022
Advanced Jammer Techniques: V3 SW CFE Update	1	2022	3	2022
Advanced Jammer Techniques: V4 SW CFE Update	1	2022	3	2022
Advanced EA (AEA): Funding Recieved	2	2021	2	2021
Advanced EA (AEA): Evaluations	2	2021	3	2021
Advanced EA (AEA): Transciever Downselect	3	2021	4	2021
Advanced EA (AEA): CFE Embedded/FPGA	4	2021	4	2022
Advanced EA (AEA): Engineering Dev	4	2021	4	2022
Advanced EA (AEA): Proposed implementation	4	2021	4	2021
Advanced EA (AEA): Integration into IT II FoS	1	2022	4	2022
Electronic Warefare Services Architecture (EWSA): Funding Recieved	2	2021	2	2021
Electronic Warefare Services Architecture (EWSA): Improved Mission: User Coordination	3	2021	3	2021
Electronic Warefare Services Architecture (EWSA): Improved Mission: AI Eval	3	2021	4	2021
Electronic Warefare Services Architecture (EWSA): Improved Mission: SW Development	4	2021	2	2022
Electronic Warefare Services Architecture (EWSA): Improved Mission: SW / System Integration	2	2022	3	2022

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 9999 / *Congressional Adds*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Electronic Warefare Services Architecture (EWSA): Improved Mission: Laboratory Test	3	2022	4	2022
Electronic Warefare Services Architecture (EWSA): EA Performance Algorithm Integration: SW Development	4	2021	2	2022
Electronic Warefare Services Architecture (EWSA): EA Performance Algorithm Integration: SW / System Integration	2	2022	3	2022
Electronic Warefare Services Architecture (EWSA): EA Performance Algorithm Integration: Laboratory Test	3	2022	4	2022
Electronic Warefare Services Architecture (EWSA): MCEN S ATO: MCEN-S Documentation	3	2021	1	2022
Electronic Warefare Services Architecture (EWSA): MCEN S ATO: RMF ATO Coordination	4	2021	3	2022
Electronic Warefare Services Architecture (EWSA): MCEN S ATO: SCANS / STIGS - POAM	1	2022	4	2022
Electronic Warefare Services Architecture (EWSA): MCEN S ATO: Sentinel Updates	2	2022	4	2022
Electronic Warefare Services Architecture (EWSA): MCEN S ATO: DEUS Updates	2	2022	4	2022
Electronic Warefare Services Architecture (EWSA): Simulator Improvements: User Coordination (training simulator)	3	2021	4	2021
Electronic Warefare Services Architecture (EWSA): Simulator Improvements: DF Requirements identification	3	2021	4	2021
Electronic Warefare Services Architecture (EWSA): Simulator Improvements: Simulator Development	4	2021	2	2022
Electronic Warefare Services Architecture (EWSA): Simulator Improvements: Simulator Integration	1	2022	3	2022
Electronic Warefare Services Architecture (EWSA): Simulator Improvements: Simulator Test	3	2022	4	2022
Electronic Warefare Services Architecture (EWSA): Simulator Improvements: Fleet Evaluation	4	2022	4	2022