Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy												Date: May 2017
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 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	942.861	22.383	92.766	54.055	-	54.055	51.563	42.199	34.631	34.296	Continuing	Continuing
0556: *EW Counter Response*	462.089	11.702	15.389	16.433	-	16.433	17.647	18.024	18.412	18.979	Continuing	Continuing
1742.: *EW Technical Development and T&E*	1.112	1.570	1.585	1.106	-	1.106	1.892	1.832	1.677	1.711	Continuing	Continuing
2175: *Tactical Air Electronic Warfare*	479.660	9.111	3.927	2.097	-	2.097	2.079	2.105	0.000	0.000	0.000	498.979
3308: *Technology Development*	0.000	0.000	2.016	2.286	-	2.286	6.309	6.373	8.669	8.841	Continuing	Continuing
3309: *Assault Survivability Optimization*	0.000	0.000	3.375	0.851	-	0.851	0.843	0.844	0.866	0.884	Continuing	Continuing
3327: *MAGTF EW Aviation Development*	0.000	0.000	64.817	29.643	-	29.643	21.846	12.053	4.017	2.869	Continuing	Continuing
3371: *MAGTF EW Interoperability Development*	0.000	0.000	1.657	1.639	-	1.639	0.947	0.968	0.990	1.012	Continuing	Continuing
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 Aircraft Survivability Equipment (ASE) and Electronic Warfare (EW)/countermeasures solutions for the USN, USMC and Coalition Aircraft to include studies and evaluations of current and future aircraft threats, modeling and simulation for improved countermeasure capabilities, and development and testing to address new and emerging threats.

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.

PE 0604279N and PE 0604376M consolidated to PE 0604270N beginning in FY 2017.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
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 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	20.113	48.766	45.809	-	45.809
Current President's Budget	22.383	92.766	54.055	-	54.055
Total Adjustments	2.270	44.000	8.246	-	8.246
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.578	0.000			
• SBIR/STTR Transfer	-0.307	0.000			
• Program Adjustments	0.000	44.000	8.413	-	8.413
• Rate/Misc Adjustments	-0.001	0.000	-0.167	-	-0.167

Change Summary Explanation

Technical: Not Applicable.

Schedule:
Project Unit 0556 / EW COUNTER RESPONSE: N/A

Project Unit 1742 / EW Technical Development and T&E: N/A

Project Unit 2175 / Tactical Air Electronic Warfare: Software Improvement (SWIP) Initial Operational Capability (IOC) completion changed from 4th Qtr. FY 2017 to 2nd Qtr. FY 2018 due to delays in software maturation and progression. SWIP Developmental Testing/Integrated Testing DT/IT completion changed from 4th Qtr. FY 2016 to 2nd Qtr. FY 2017 due to delays in software maturation and progression.

Project Unit 3308 / Technology Development: N/A

Project Unit 3309 / Assault Survivability Optimization: FY 2017 flight test changed from 2nd/3rd Qtr to 3rd/4th Qtr due to aircraft and test range availability. FY17 Test MDF changed from 2nd Qtr to 3rd Qtr to align with flight test.

Project Unit 3327 / MAGTF EW Aviation Development: Intrepid Tiger II (AN/ALQ-231) BLK X radar jammer schedule adjusted to reflect late receipt of Science and Technology (S&T) funding in FY 2016 and impact of Congressional Mark on S&T funding. AN/ALQ-231(V)1 BLK X In-Progress Review (IPR) renamed to AN/ALQ-231(V)1 BLK X Functional Configuration Audit / System Verification Review (FCA/SVR) and re-aligned from 3rd Qtr. FY 2018 to 1st Qtr. FY 2019. AN/ALQ-231(V)1 BLK X Technical Directive Fleet Release (TD Flt Rel) moved from 2nd Qtr. FY 2019 to 2nd Qtr. FY 2020. AN/ALQ-231 BLK X Hardware

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
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*

Development end date changed from 4th Qtr. FY 2021 to 2nd Qtr. FY 2020. AN/ALQ-231(V)1 BLK X Software Development (SW Dev) start moved from 1st Qtr. FY 2017 to 3rd Qtr. FY 2017 and completion moved from 4nd Qtr. FY 2017 to 2nd Qtr. FY 2019 to reflect impact of effort remaining unfunded in FY 2016. AN/ALQ-231(V)1 BLK X Development Test/Performance Test (DT/Performance Test) start date was realigned from 2nd Qtr. FY 2017 to 3rd Qtr. FY 2018 with the completion date sliding from 2nd Qtr. FY 2018 to 1st Qtr. FY 2019. AN/ALQ-231(V)1 BLK X Initial Operational Test & Evaluation (IOT&E) was renamed to AN/ALQ-231(V)1 BLK X Operational Test & Evaluation (OT&E) and the start date slid from 4th Qtr. FY18 to 2nd Qtr. FY 2019 and the completion date slid from 1st Qtr. FY 2019 to 4th Qtr. FY 2019. AN/ALQ-231(V)1 BLK X Lot 1 delivery start date moved from 4th Qtr. FY 2019 to 4th Qtr. FY 2021 and end date moved from 3rd Qtr. FY 2020 to 3rd Qtr. FY 2022. AN/ALQ-231(V)1 BLK X Lot 2 delivery start date moved from 4th Qtr. FY 2020 to 4th Qtr. FY 2022.

Schedules and projects adjusted including AN/ALQ-231(V)3 UH-1 Jettison Capability, Electronic Warfare Services Architecture (EWSA), Marine Air Ground Tablet (MAGTAB) Integration with AN/ALQ-231(V), MAGTF EW Jammer Techniques Development, KC-130 Integration for AN/ALQ-231(V)1 Block 1 Communications Jammer, and Electronic Warfare (EW) Range Improvements and Upgrades.

Project Unit 3371 / MAGTF EW Interoperability Development: N/A

Project Units 3308, 3309, 3327, and 3371 were incorporated into PE 0604270N in President's Budget 2017.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
0556: *EW Counter Response*	462.089	11.702	15.389	16.433	-	16.433	17.647	18.024	18.412	18.979	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops upgrades to combat the increasingly complex and dense Electronic Warfare (EW) threat environment. Required improvements in Airborne Electronic Attack (AEA) will achieve application of state-of-the-art signal exploitation, processing, display techniques, improved tactics, and jamming capabilities against EW threats.

Efforts include continued development of Force Protection/Overseas Contingency Operations (classified discussion available upon request) Navigation and Information Operations applications and enhanced communications jamming. Efforts also include risk reduction activities to support the upgrade of the AN/ALQ-99 Tactical Jamming System (TJS) capabilities to include technology studies, breadboard/demonstrator development, and testing in laboratory and relevant environments. The efforts under this project provide for electronic countermeasure responses to advanced threat weapon systems and Command, Control, and Communications (C3) networks that are expanding in density and technical complexity. This project funds the continued development and integration of all EW and Electronic Attack systems for the US Navy electronic attack aircraft including improvements within precision Direction of Arrival, geo-location, Specific Emitter Identification, Auto-Electronic Support Measures, and selective reactive jamming.

Electronic Attack Jammer Techniques Optimization (JATO) and test support is required to address and counter new and evolving radar and communications threats in support of existing and emerging systems such as the EA-6B, EA-18G, and Next Generation Jammer (NGJ). JATO will continue to generate techniques, tactics, and procedures that will optimize the capabilities of existing weapon systems, and to assist in requirements definitions of emerging AEA systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: JAMMER TECHNIQUES OPTIMIZATION (JATO)	11.400	15.389	16.433	0.000	16.433
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued engineering development and test support of existing and emerging systems such as the EA-6B, EA-18G, and NGJ to address potential Radio Frequency (RF) and Cyber Electronic Warfare (Cyber/EW) effects on current and evolving radar/communications threats. JATO continued to generate techniques, tactics, and procedures to optimize the capabilities of systems such as, but not limited to, the AN/ALQ-99, USQ-113, ALQ-218, ALQ-227, AN/ALQ-231, ALE-43, and Airborne Electronic Attack Expendable (AEAE) systems; and assist in requirements definitions of emerging Airborne Electronic Attack (AEA) systems. JATO continued to lead					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
efforts in support of Overseas Operations and Force Protection issues. (Classified discussion available upon request). ***FY 2017 Plans:*** The JATO organization will continue engineering development and test support of existing and emerging systems such as the EA-6B, EA-18G, and NGJ to address potential RF and Cyber Electronic Warfare (Cyber/EW) effects on current and evolving radar/communications threats. Jammer Techniques Optimization (JATO) will continue to generate techniques, tactics, and procedures to optimize the capabilities of systems such as, but not limited to, the AN/ALQ-99, USQ-113, ALQ-218, ALQ-227, AN/ALQ-231, ALE-43, and Airborne Electronic Attack Expendable (AEAE) systems; and assist in requirements definitions of emerging Airborne Electronic Attack (AEA) systems. JATO continues to lead efforts in support of Overseas Operations and Force Protection issues. (Classified discussion available upon request). Increase in funding from FY 2016 to FY 2017 is due to increased flight and ground testing against adversary systems and increased efforts of the Advanced Techniques Group (ATG) to address Cyber/EW threats. ***FY 2018 Base Plans:*** The JATO organization will continue engineering development and test support of existing and emerging systems such as the EA-6B, EA-18G, and Next Generation Jammer to address potential Radio Frequency (RF) and Cyber/EW effects on current and evolving radar/communications threats. JATO will continue to generate techniques, tactics, and procedures to optimize the capabilities of systems such as, but not limited to, the AN/ALQ-99, USQ-113, ALQ-218, ALQ-227, AN/ALQ-231, ALE-43; and assist in requirements definitions of emerging AEA systems. JATO continues to lead efforts in support of Overseas Operations and Force Protection issues. (Classified discussion available upon request). Increase in funding from FY 2017 to FY 2018 is required to support additional testing requirements for developmental Electronic Warfare (EW) systems, and to provide increased flight and ground testing against adversary systems. Additionally, funds will provide for increased efforts of the Advanced Techniques Group (ATG) to address Cyber/EW threats. ***FY 2018 OCO Plans:*** N/A					
Title: AIRBORNE ELECTRONIC ATTACK EXPENDABLE (AEAE)	0.302	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Continued risk reduction efforts including evaluation of Electronic Warfare payload(s) for integration into AEAE platform. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	11.702	15.389	16.433	0.000	16.433

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0511: *EA-6 Series*	7.738	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3,394.382
• APN/0513: *AEA Systems*	36.233	51.900	52.960	-	52.960	46.982	50.936	70.403	71.807	172.893	797.960

Remarks

D. Acquisition Strategy

The Jammer Techniques Optimization Group (JATO), comprised of a partnership between the Government and a University Aligned Research Center, continues to research Electronic Warfare tactics and techniques. The JATO prime delivery order, a cost plus fixed fee contract that covers the period of FY 2013 through FY 2017, was awarded to Johns Hopkins University in 3Qtr. FY 2013. A follow-on contract for JATO prime research efforts is planned to award prior to the end of FY 2017.

E. Performance Metrics

1. Jammer Techniques Optimization development counters enemy radar systems and communication systems to provide techniques to protect allied forces.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary HDW Develop - ICAP III	C/FFP	Various : Various	262.104	0.000		0.000		0.000		-		0.000	0.000	262.104	262.104
Systems Engineering NRL	WR	Naval Research Lab : Maryland	10.347	1.700	Dec 2015	1.606	Nov 2016	1.635	Nov 2017	-		1.635	Continuing	Continuing	Continuing
Systems Engineering NAWCAD	WR	NAWCAD : Patuxent River, MD	24.741	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering NAWCWD	WR	NAWCWD : Point Mugu, CA	82.052	4.763	Nov 2015	4.376	Nov 2016	4.642	Nov 2017	-		4.642	Continuing	Continuing	Continuing
Systems Engineering NSWC	WR	NSWC Det : Crane, IN	10.711	0.210	Dec 2015	0.625	Nov 2016	0.675	Nov 2017	-		0.675	Continuing	Continuing	Continuing
Systems Engineering VAR	WR	Various : Various	14.893	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior Year Development cost no longer Funded in the FYDP	Various	Various : Various	1.043	0.000		0.000		0.000		-		0.000	0.000	1.043	1.043
		Subtotal	405.891	6.673		6.607		6.952		-		6.952	-	-	-

Remarks

Growth in excess of inflation indices in FY 2018 is due to increased efforts related to flight testing.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - Jammer Techniques Optimization (JATO)	SS/CPFF	Johns Hopkins Unv : Maryland	35.504	4.025	Dec 2015	4.744	Nov 2016	4.838	Nov 2017	-		4.838	Continuing	Continuing	Continuing
Eng & Tech Srvc (Non FFRDC)	Various	Various : Various	17.061	0.941	Dec 2015	1.833	Nov 2016	1.869	Nov 2017	-		1.869	Continuing	Continuing	Continuing
Prior year Support costs no longer funded in the FYDP	Various	Various : Various	2.256	0.000		0.000		0.000		-		0.000	0.000	2.256	-
		Subtotal	54.821	4.966		6.577		6.707		-		6.707	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Jammer Techniques Optimization (JATO) Flight Test	WR	NAWCWD : Point Mugu, CA	0.000	0.000		1.556	Nov 2016	2.091	Nov 2017	-		2.091	Continuing	Continuing	Continuing
JATO Ground/Lab Test	WR	NAWCWD : Point Mugu, CA	0.000	0.000		0.519	Nov 2016	0.553	Nov 2017	-		0.553	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		2.075		2.644		-		2.644	-	-	-

Remarks

Jammer Techniques Optimization (JATO) Flight and Ground/Lab Tests broken out separately from Systems Engineering efforts for budget clarity in FY 2017. These lines will fund tests of JATO techniques, tactics, and procedures (TTPs) against real and simulated adversary systems. FY 2018 includes an additional two JATO Flight Tests over budgeted efforts in FY 2017.

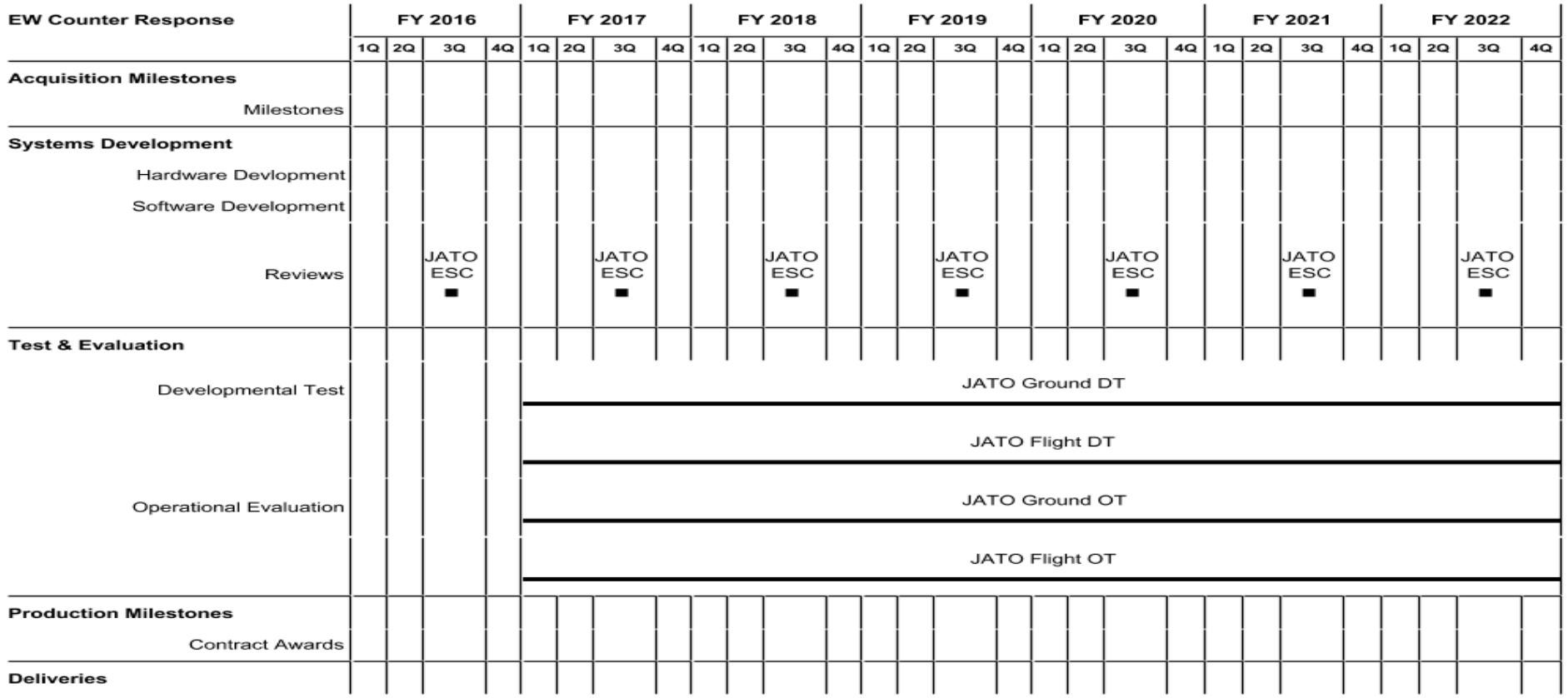
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	Various : Various	1.226	0.009	Oct 2015	0.030	Oct 2016	0.030	Oct 2017	-		0.030	Continuing	Continuing	Continuing
Travel	WR	Various : Various	0.151	0.054	Oct 2015	0.100	Oct 2016	0.100	Oct 2017	-		0.100	Continuing	Continuing	Continuing
		Subtotal	1.377	0.063		0.130		0.130		-		0.130	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	462.089	11.702		15.389		16.433		-		16.433	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 0556 / *EW Counter Response*



2018OSD - 0604270N - 0556

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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: Reviews: JATO Executive Steering Committee 2016	3	2016	3	2016
Systems Development: Reviews: JATO Executive Steering Committee 2017	3	2017	3	2017
Systems Development: Reviews: JATO Executive Steering Committee 2018	3	2018	3	2018
Systems Development: Reviews: JATO Executive Steering Committee 2019	3	2019	3	2019
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	2017	4	2022
Test & Evaluation: Developmental Test: JATO Flight Developmental Test	1	2017	4	2022
Test & Evaluation: Operational Evaluation: JATO Ground Operational Test	1	2017	4	2022
Test & Evaluation: Operational Evaluation: JATO Flight Operational Test	1	2017	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1742.: *EW Technical Development and T&E*	1.112	1.570	1.585	1.106	-	1.106	1.892	1.832	1.677	1.711	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Electronic Warfare Technical Development Studies and Test & Evaluation	1.570	1.585	1.106	0.000	1.106
Articles:	-	-	-	-	-
Description: This project funds efforts that focus on the quick reaction prototyping of tactical information and electronic warfare systems.					
FY 2016 Accomplishments: *Performed studies and vulnerability analysis on emerging/changing threats/targets for EW programs. *Researched and analyzed emerging/evolving Signal of Interests (SOIs) for vulnerabilities to EW systems. *Developed, tested, evaluated and integrated custom-made wave forms into MCS-21 systems for employment against specific adversary SOIs *Provided specialized technical engineering expertise, systems engineering, and signal propagation/RF studies. *Use modeling and simulation to design and optimize antenna designs					
FY 2017 Plans: *Continue studies and vulnerability analysis on emerging/changing threats/targets for EW programs. Assess vulnerabilities in adversary systems and signals with the purpose of developing countermeasures to create commanders desired effects Realize vulnerability in order to develop and integrate specific wave forms into MCS-21 systems. *Provide hardware prototyping and testing. *Provide support for test plan development, antenna/platform integration, testing, and post-test analyses					
FY 2018 Base Plans: *Continue studies and vulnerability analysis on emerging/changing threats/targets for EW programs.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
*Assess vulnerabilities in adversary systems and signals with the purpose of developing countermeasures to create commanders desired effects. *Realize vulnerability in order to develop and integrate specific wave forms into MCS-21 systems. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.570	1.585	1.106	0.000	1.106

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

BSO 60: Development of classified prototypes and special capabilities. The Navy Cyber Warfare Development Group (NCWDG) is granted streamlined acquisition authority for the development of classified prototypes and special capabilities under the DASN(C4I).

E. Performance Metrics

BSO 60: Research, assess and develop EW/IW capabilities. The NCWDG serves as the Program Management Office of the EW Technical Development and Information Warfare (IW) program. As such, NCWDG is tasked as the Navy's principal technical agent to research, assess, and develop EW/IW capabilities.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2175: *Tactical Air Electronic Warfare*	479.660	9.111	3.927	2.097	-	2.097	2.079	2.105	0.000	0.000	0.000	498.979
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 418

A. Mission Description and Budget Item Justification

Integrated Defensive Electronic Countermeasures (IDECM) Block 3 (IB-3/ALE-55) introduced the new Fiber Optic Towed Decoy (FOTD), ALE-55, capability to the IDECM Block 2 Electronic Warfare (EW) suite as a replacement for the ALE-50 decoy. The FOTD, when integrated with the rest of the F/A-18E/F EW suite (i.e., ALQ-214, ALR-67(V)3, ALE-47 and ALE-50), the associated cockpit controls, displays and other avionics significantly improves the survivability of the host aircraft in a radio frequency threat environment. IB-3 MS III (Full-Rate Production Decision) was approved in the 4th Qtr. FY 2011. IB-3 Initial Operational Capability (IOC) was achieved 4th Qtr. FY 2011.

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 and test, delivery of 17 engineering development models, 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. In addition to performing the RWR function, the ALR-67 is the EW bus controller. The EW bus is the primary interface between the EW systems (Jammer, RWR, and CMDS). The mission computer is the avionics bus controller, the interface between the EW suite and other avionics. Production Cut-In occurred 2nd Qtr FY 2012, Initial Operational Capability (IOC) achieved May 2015.

ALQ-214 software improvement will provide the ALQ-214 with digital radio frequency memory deny-delay, technique capability significantly improving F/A-18C/D/E/F survivability. Acquisition and contract strategy includes development, integration and test of the ALQ-214 software improvements through sole-source contract award. Minor modifications to other avionics are required in order to integrate this new capability. These other avionics may include, but are not limited to, the ALR-67(V)2, ALR-67(V)3, ALE-47, ALE-50, ALE-55, mission computer and fire control radar.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Tactical Air EW	9.111	3.927	2.097	0.000	2.097
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
The ALQ-214 software improvement contract continued into FY 2016. Integrated testing for software improvement started and continued through FY 2016. ***FY 2017 Plans:*** ALQ-214 Software Improvement operational testing will begin and will continue through FY 2017. ***FY 2018 Base Plans:*** ALQ-214 Software Improvement Phase 2 Algorithm Development will begin in FY 2018 and continue into FY 2020. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	9.111	3.927	2.097	0.000	2.097

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0576 004-12: *Common On-Board Jammer*	94.087	57.568	49.976	-	49.976	47.016	47.873	48.854	49.829	278.270	932.897
• PANMC/0182: *Airborne Expendable CM*	21.723	20.905	23.534	-	23.534	24.009	24.483	24.902	25.418	Continuing	Continuing

Remarks

Airborne Expendable Countermeasures funding only includes the Active Jammer ALE-55 Fiber Optic Towed Decoy (FOTD) and associated other support.

D. Acquisition Strategy

IDECM Block 3 (IB-3) sole source award of Full-Rate Production (FRP) in FY 2013 to British Aerospace Engineering (BAE). BAE is the original developer/manufacturer and current sustainer of the ALE-55. Annual IB-3 production contracts will continue through FY 2049. IB-4 Engineering Change Proposal (ECP) and Software Improvement (SWIP) development contracts were awarded sole-source to Harris in 2009 and 2012 respectively. Harris is the original developer/manufacturer and current sustainer of the ALQ-214. Annual IB-4 production awards are planned through 2027.

E. Performance Metrics

IDECM Block 3: Successfully award ALE-55 FRP 8 option contract in 1st Qtr. FY 2018.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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*

IDECM Block 4: Successfully award ALQ-214 FRP 14-16 contract in 3rd Qtr. FY 2017. ALQ-214 FRP 14-16 is planned as Sole Source Fixed Price Incentive Firm (SS/FPIF) contract with a base plus 2 options to Harris.

ALQ-214 Software Improvement: Successfully achieve Initial Operational Capability in 2nd Qtr. FY 2018.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Integration - IDECM Boeing	Various	Various : Various	7.519	0.000		0.000		0.000		-		0.000	0.000	7.519	7.519
Systems Eng - IDECM	SS/CPFF	Various : Various	64.169	0.000		0.000		0.000		-		0.000	0.000	64.169	64.169
Prior Year Prod Dev costs no longer funded in FYDP	Various	Various : Various	236.024	0.000		0.000		0.000		-		0.000	0.000	236.024	-
		Subtotal	307.712	0.000		0.000		0.000		-		0.000	0.000	307.712	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Log Supt - IDECM	WR	NAWCAD : Pax River, MD	0.229	0.080	Nov 2015	0.113	Dec 2016	0.114	Nov 2017	-		0.114	0.232	0.768	-
Integrated Log Supt - IDECM	SS/CPFF	WYLE : Pax River, MD	0.050	0.000		0.000		0.000		-		0.000	0.000	0.050	0.050
Software Dev-ALQ - 214 SW Dev	SS/CPFF	Harris : Clifton, NJ	22.227	3.220	Mar 2016	0.000		0.000		-		0.000	0.000	25.447	25.447
Engineering Support	WR	Various : Various	1.912	0.383	Nov 2015	0.403	Dec 2016	1.334	Nov 2017	-		1.334	2.649	6.681	-
Engineering Support	WR	NAWCWD : China Lake, CA	0.195	1.457	Feb 2016	0.000		0.000		-		0.000	0.000	1.652	-
Engineering Support	WR	NAWCWD : Point Mugu, CA	2.774	1.252	Nov 2015	1.106	Feb 2017	0.000		-		0.000	0.000	5.132	-
Studies and Analysis SW Dev	SS/CR	Johns Hopkins : Baltimore, MD	1.473	0.000		0.100	Mar 2017	0.000		-		0.000	0.000	1.573	1.573
Prior Year Support costs no longer funded in FYDP	Various	Various : Various	10.307	0.000		0.000		0.000		-		0.000	0.000	10.307	-
		Subtotal	39.167	6.392		1.722		1.448		-		1.448	2.881	51.610	-

Remarks

Software Dev - ALQ-214 SW Dev. Software Development challenges required additional funding to complete the effort.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Dev Test & Eval Supt ALQ-214 SW Imp	WR	Various : Various	0.420	0.000		0.000		0.000		-		0.000	0.000	0.420	-
Oper Test & Eval ALQ-214 SW Imp	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Integrated Test & Eval ALQ-214 SW Imp	WR	NAWCWD : China Lake, CA	0.000	0.952	Mar 2016	0.000		0.000		-		0.000	0.000	0.952	-
Dev Test & Eval Supt ALQ-214 SW Imp	WR	NAWCWD : China Lake, CA	9.366	0.740	Jul 2016	1.350	Feb 2017	0.000		-		0.000	0.000	11.456	-
Dev Test & Eval Supt ALQ-214 SW IMP	WR	NAWCWD : Point Mugu, CA	0.743	0.111	Nov 2015	0.319	Feb 2017	0.000		-		0.000	0.000	1.173	-
Oper Test & Eval IDECM	WR	NAWCWD : China Lake, CA	2.737	0.000		0.000		0.000		-		0.000	0.000	2.737	-
Eng Test & Eval IDECM	WR	Various : Various	2.210	0.400	Nov 2015	0.175	Dec 2016	0.434	Nov 2017	-		0.434	0.874	4.093	-
Eng & Tech Srvcs (Non-FFRDC)	SS/CPFF	Various : Various	1.588	0.455	Jun 2016	0.292	Dec 2016	0.153	Dec 2017	-		0.153	0.311	2.799	2.799
Prior Year T&E costs no longer funded in FYDP	Various	Various : Various	26.007	0.000		0.000		0.000		-		0.000	0.000	26.007	-
		Subtotal	43.071	2.658		2.136		0.587		-		0.587	1.185	49.637	-

Remarks

SWIP FOT&E has not been conducted in FY17 due to lack of software maturity and available test resources. Additional Developmental Test & Evaluation for SWIP support will continue at both China Lake and Point Mugu in FY17.

Management Services ($ in Millions)

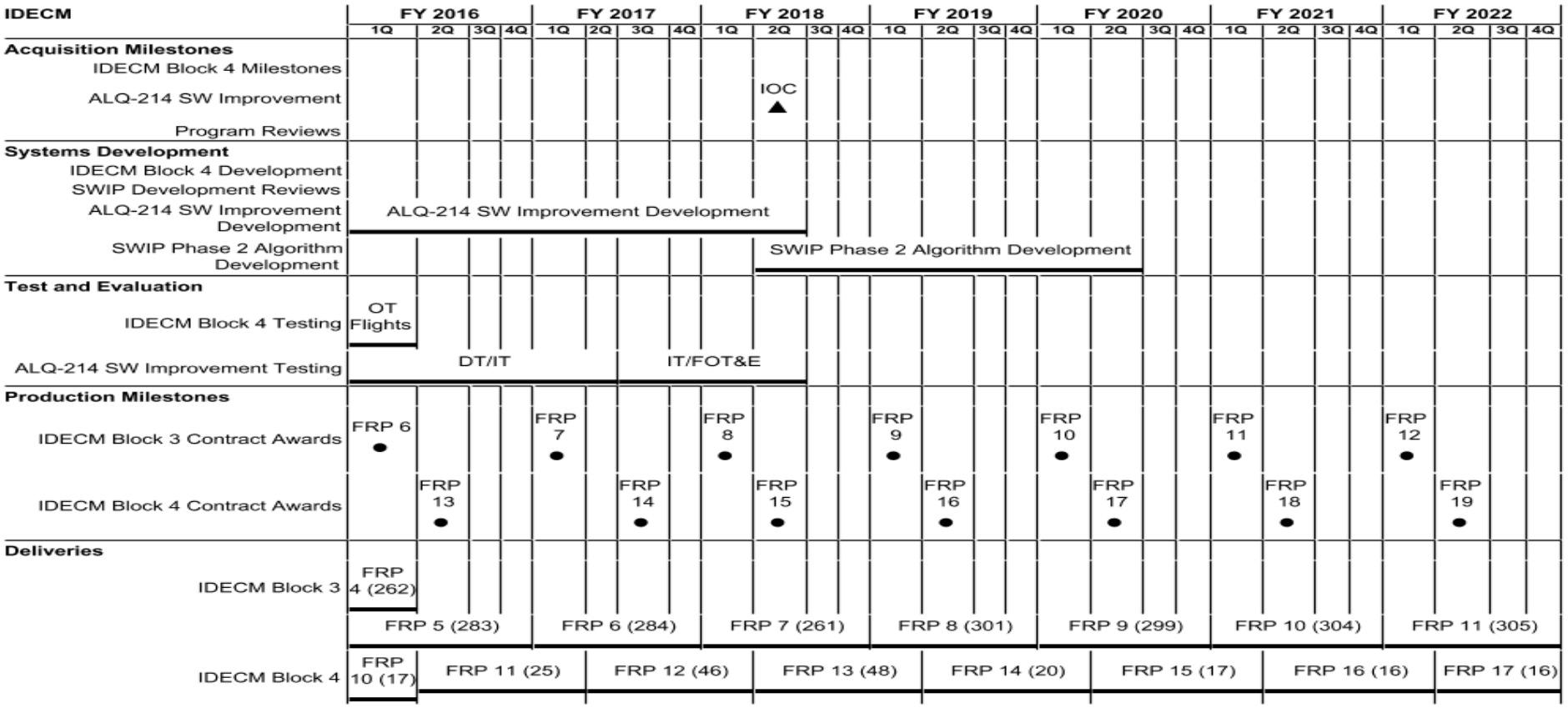
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Allot	NAWCAD : Pax River, MD	0.775	0.061	Oct 2015	0.069	Oct 2016	0.062	Oct 2017	-		0.062	0.118	1.085	-
Prior Year Mgmt costs no longer funded in FYDP	Various	Various : Various	88.935	0.000		0.000		0.000		-		0.000	0.000	88.935	-
		Subtotal	89.710	0.061		0.069		0.062		-		0.062	0.118	90.020	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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*	

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	479.660	9.111		3.927		2.097		-		2.097	4.184	498.979	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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*



2018PB - 0604270N - 2175 IDECM Block 4 is an ECP to Block 2

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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 (IOC)	2	2018	2	2018
Systems Development: ALQ-214 SW Improvement Development: ALQ-214 SW Improvement Development	1	2016	2	2018
Systems Development: SWIP Phase 2 Algorithm Development: SWIP Phase 2 Algorithm Development	2	2018	2	2020
Test and Evaluation: IDECM Block 4 Testing: IDECM Block 4 Operational Testing Flights	1	2016	1	2016
Test and Evaluation: ALQ-214 SW Improvement Testing: ALQ-214 SW Improvement Development Testing (DT)/Integrated Testing (IT)	1	2016	2	2017
Test and Evaluation: ALQ-214 SW Improvement Testing: ALQ-214 SW Improvement Integrated Test (IT)/Follow-on Test & Evaluation (FOT&E)	3	2017	2	2018
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 6	1	2016	1	2016
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 7	1	2017	1	2017
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 8	1	2018	1	2018
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 9	1	2019	1	2019
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 10	1	2020	1	2020
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 11	1	2021	1	2021

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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**
Production Milestones: IDECM Block 3 Contract Awards: IDECM Block 3 Full-Rate Production (FRP) 12	1	2022	1	2022
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 13	2	2016	2	2016
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 14	3	2017	3	2017
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 15	2	2018	2	2018
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 16	2	2019	2	2019
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 17	2	2020	2	2020
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 18	2	2021	2	2021
Production Milestones: IDECM Block 4 Contract Awards: IDECM Block 4 Full-Rate Production (FRP) 19	2	2022	2	2022
Deliveries: IDECM Block 3: IDECM Block 3 FRP 4 Deliveries (262)	1	2016	1	2016
Deliveries: IDECM Block 3: IDECM Block 3 FRP 5 Deliveries (283)	1	2016	4	2016
Deliveries: IDECM Block 3: IDECM Block 3 FRP 6 Deliveries (284)	1	2017	4	2017
Deliveries: IDECM Block 3: IDECM Block 3 FRP 7 Deliveries (261)	1	2018	4	2018
Deliveries: IDECM Block 3: IDECM Block 3 FRP 8 Deliveries (301)	1	2019	4	2019
Deliveries: IDECM Block 3: IDECM Block 3 FRP 9 Deliveries (299)	1	2020	4	2020
Deliveries: IDECM Block 3: IDECM Block 3 FRP 10 Deliveries (304)	1	2021	4	2021
Deliveries: IDECM Block 3: IDECM Block 3 FRP 11 Deliveries (305)	1	2022	4	2022
Deliveries: IDECM Block 4: IDECM Block 4 FRP 10 Deliveries (17)	1	2016	1	2016
Deliveries: IDECM Block 4: IDECM Block 4 FRP 11 Deliveries (25)	2	2016	1	2017
Deliveries: IDECM Block 4: IDECM Block 4 FRP 12 Deliveries (46)	2	2017	1	2018

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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**
Deliveries: IDECM Block 4: IDECM Block 4 FRP 13 Deliveries (48)	2	2018	1	2019
Deliveries: IDECM Block 4: IDECM Block 4 FRP 14 Deliveries (20)	2	2019	1	2020
Deliveries: IDECM Block 4: IDECM Block 4 FRP 15 Deliveries (17)	2	2020	1	2021
Deliveries: IDECM Block 4: IDECM Block 4 FRP 16 Deliveries (16)	2	2021	1	2022
Deliveries: IDECM Block 4: IDECM Block 4 FRP 17 Deliveries (16)	2	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3308: *Technology Development*	0.000	0.000	2.016	2.286	-	2.286	6.309	6.373	8.669	8.841	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

PE 0604279N consolidated to PE 0604270N beginning in FY 2017 pursuant to Principal Deputy Assistant Secretary of the Navy Financial Management and Comptroller (PDASN (FM&C)) memorandum signed 5 December 2014.

A. Mission Description and Budget Item Justification

Project Unit 3308 / Technology Development funds efforts that focus on the quick reaction prototyping of tactical Electronic Warfare (EW)/countermeasures solutions for increased survivability providing friendly forces the self-protection necessary for successful mission accomplishments. This program directly addresses the operational requirement of strike platforms for optimization of EW/countermeasure solutions across the Department of the Navy. Improved countermeasure capabilities and techniques through modeling and simulation, validated in subsequent field testing to address new and emerging threats, capitalize upon upgrades to Aircraft Survivability Equipment systems capabilities for strike platforms and evaluate new radio frequency countermeasure and infra-red countermeasure technologies.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Technology Development	0.000	2.016	2.286	0.000	2.286
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Continue EW vulnerability studies/analysis, product development and test conducted for strike aircraft.					
FY 2018 Base Plans: Continue EW vulnerability studies/analysis, product development and test conducted for strike aircraft.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	2.016	2.286	0.000	2.286

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3308 / *Technology Development*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

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

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3309: *Assault Survivability Optimization*	0.000	0.000	3.375	0.851	-	0.851	0.843	0.844	0.866	0.884	Continuing	Continuing
Quantity of RDT&E Articles		-	480	-	-	-	-	-	-	-		

Note

PE 0604279N consolidated to PE 0604270N beginning in FY 2017 pursuant to Principal Deputy Assistant Secretary of the Navy Financial Management and Comptroller (PDASN (FM&C)) memorandum signed 5 December 2014.

A. Mission Description and Budget Item Justification

Program was established by Chief of Naval Operations (OPNAV) N98 to fill United States Navy (USN) and United States Marine Corps (USMC) aircraft survivability gaps against current and future threat systems using current, and advanced technology expendable countermeasures as well as improvements in Aircraft Survivability Equipment (ASE) systems. Assault Survivability Optimization is required for Department of Navy aircraft self-protection against Man-Portable Air Defense Systems (MANPADs), including accelerated proliferation of threat addressed in JUONS #SO-0010. This project funds the development, testing, and rapid fielding of advanced countermeasures and enhanced employment techniques needed to support current and future operations for USN and USMC aircraft; incorporates capability advancements in ASE and expendable countermeasures to develop and deploy countermeasure responses resulting in increased platform survivability. Countermeasure Techniques developed for improved survivability are supported by Statement of Functionality for Aircraft Survivability Equipment Smart Dispense, dated 19 January 2012. Resources will be applied to the following areas: 1) studies and evaluations to optimize current countermeasures and ASE capabilities, 2) development and demonstration of advanced expendable countermeasures and countermeasure techniques, 3) testing and evaluation of advanced countermeasures, 4) development of system software integration for the testing and deployment of advanced countermeasure techniques, and 5) development of and upgrades to modeling tools and specialized equipment required to conduct evaluation of advanced countermeasures against proliferating threats.

Advanced countermeasures procured in FY 2016 (PE 0604279N) will support flight test for optimized/advanced countermeasures techniques in FY 2017. The quantity of 1,552 units is required by Air Expendable Countermeasures Test and Evaluation Master Plan #1480 to complete the flight testing for test Mission Data Files (MDF) and optimized/advanced countermeasures techniques (RDT&E Articles are advanced air expendable countermeasures).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Assault Survivability Optimization	0.000	3.375	0.851	0.000	0.851
Articles:	-	480	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue development and testing of advanced countermeasure techniques and upgrade specialized evaluation equipment for advancing threat systems. Perform modeling and simulation and effectiveness flight testing for UH-1Y, AH-1Z and MH-60S. 480 test articles procured in FY17 are advanced expendable countermeasures for flight effectives testing /optimization flight tests in FY18. Continue building radio frequency countermeasure modeling and simulation capability to address advanced threats and support development of radio frequency countermeasures and techniques. ***FY 2018 Base Plans:*** Continue development and testing of advanced countermeasure techniques and upgrade specialized evaluation equipment for advancing threat systems. Perform modeling and simulation and effectiveness flight testing for MH-60R. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	3.375	0.851	0.000	0.851

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Acquisition strategy is to leverage improvements in air expendable countermeasures technology and integration of existing Aircraft Survivability Equipment (ASE) sensor data to enhance platform survivability on United States Navy and United States Marine Corps platforms through more effective dispense techniques, investing in enhancements in modeling and simulation tools to better evaluate countermeasure effectiveness, upgrading test and evaluation equipment to incorporate current and future threats for effectiveness tests and developing and demonstrating advanced concept countermeasures for future threats. Advanced countermeasures procured in FY16 will support flight test for optimized/advanced countermeasure techniques in FY17. 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 to government software support activities for fleet release to increase aircraft/aircrew survivability.

E. Performance Metrics

Maintain Air Expendable Countermeasures (AECM) ORD: #512-88-89 dated 28 May 1999 requirement to provide operationally effective mixture of countermeasures that can be employed to degrade and/or neutralize the effectiveness of current and projected threats. Continued development of optimized/advanced countermeasure techniques and advance countermeasures by on-going analysis and test flight efforts related to aircraft platform survivability based on threat development and proliferation. Countermeasure Techniques developed for improved survivability are further supported by Statement of Functionality for Aircraft Survivability Equipment

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3309 / *Assault Survivability Optimization*

Smart Dispense, dated 19 January 2012. Project Unit 3309 efforts will continue to change in response to this requirement when similar threat proliferation, advances in countermeasures technology and integrated ASE capability advancements are accomplished in particular the Radio Frequency (RF) and Ultra-violet (UV) spectrums. Project will include efforts to satisfy Department of Navy aircraft self-protection against Man-Portable Air Defense Systems (MANPADs), including accelerated proliferation of threat addressed in JUONS #SO-0010.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3327: *MAGTF EW Aviation Development*	0.000	0.000	64.817	29.643	-	29.643	21.846	12.053	4.017	2.869	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

PE 0604376M was consolidated to PE 0604270N beginning in FY 2017 pursuant to Principal Deputy Assistant Secretary of the Navy Financial Management and Comptroller (PDASN (FM&C)) memorandum signed 5 December 2014.

A. Mission Description and Budget Item Justification

Original President's Budget 2017 FY 2017 budget submission was $20.817 million and has increased by $44 million to $64.817 million as a result of the amended 2017 President's Budget. President's Budget 2017 as amended includes additional funding for the following efforts: $3 million for development of a jettison capability for the AN/ALQ-231(V)3 pod on the H-1 platform; $5.5 million for development of the Electronic Warfare Services Architecture (EWSA); $1 million for software development to integrate the Marine Air Ground Tablet (MAGTAB) with the AN/ALQ-231(V); $4 million for Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) Jammer Techniques Optimization development; $10 million for integration of the AN/ALQ-231(V)1 on the KC-130 and flight envelope expansion; and $20.5 million for Electronic Warfare Range Improvements.

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) that support the Commandant of the Marine Corps' Strategy and Vision 2025 and Joint Vision 2025. The SoS will address MAGTF EW sufficiency gaps in the areas of Electronic Attack, EW Support, and Electronic Protection with a multitude of payloads designed for carriage on a variety of organic MAGTF air and ground 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.

The AN/ALQ-231(V)1 pod is the Fixed-Wing variant of the Intrepid Tiger II pod flown on the AV-8B and F/A-18A-D platforms. The AN/ALQ-231(V)2 will be the variant of the Intrepid Tiger II pod flown on unmanned aerial vehicle (UAV) platforms once integration is complete. The AN/ALQ-231(V)3 is the Rotary-Wing variant of the Intrepid Tiger II pod flown on the AH-1 and UH-1 platforms. As of the President's Budget 2015 submission, the AN/ALQ-231(V)1 was the only approved configuration and nomenclature for the Intrepid Tiger II pod. The re-designation of the AN/ALQ-231 variants occurred with the approval of Rapid Deployment Capability authorization for AN/ALQ-231 on Rotary Wing platforms by the Assistant Secretary of the Navy for Research, Development, and Acquisition (ASN(RD&A)) on January 14, 2014.

MAGTF EW will also commence efforts to develop an EW Payload for USMC Unmanned Aircraft System (UAS) platforms in FY 2018. Host platforms include, but are not limited to, the RQ-21A. This project will result in an EW payload capable of conducting, supporting, and coordinating Electro-Magnetic Spectrum (EMS) operations in the form of Electronic Attack (EA) and Electronic Surveillance (ES) against Irregular Warfare threats. Additionally, this payload will be scalable and adaptable for emerging threats and will be interoperable with the USMC's Electronic Warfare Services Architecture (EWSA). This new capability will be integrated for MAGTF tactical coordination of cyberspace and EW operations via the Cyber Electronic Warfare Coordination Cell (CEWCC).

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Intrepid Tiger II (AN/ALQ-231)	0.000	20.817	21.143	0.000	21.143
Articles:	-	-	-	-	-

FY 2016 Accomplishments:
N/A

FY 2017 Plans:
The AN/ALQ-231 (V)1 BLK X received a $5.400M investment in FY 2016 by the Office of Secretary of Defense's Science and Technology (S&T) program under Program Element (PE) 0603618D8Z Project Unit (PU) P244

In FY 2017, technologies developed for the AN/ALQ-231(V)1 BLK X by the Office of Secretary of Defense's S&T program under PE 0603618D8Z PU P244 will transition to the USMC. The Intrepid Tiger II (AN/ALQ-231) program will continue to mature hardware technology, update targeting techniques, and correct identified software discrepancies to ensure relevance against emerging communication and radar threats.

The USMC will assume responsibility for all efforts to develop and test Intrepid Tiger II based solutions to radar threats in support of the penetrating jammer mission, culminating in the release of the AN/ALQ-231 (V)1 BLK X Radar Jammer for the AV-8B, F/A-18C/D, and MV-22. Updates to major components of the AN/ALQ-231 to address this new threat set will commence in FY 2016 and are expected to include upgrades to amplifiers, transceivers, antennas, radios/encryptors, a direction finding array, and the development of a modular pod shell. Other components may also require upgrade/update due to configurations in the AN/ALQ-231 V(1) pod. Additionally, lab testing of upgraded components is expected to occur in FY 2017.

FY 2017 efforts also include the investigation of the potential for integration of the Intrepid Tiger II capability on the C-130 platform. Related research efforts will work to develop an enabling capability to facilitate Collaborative Electronic Warfare (CEW) through shared organic, national and space-based Electromagnetic Spectrum (EMS) sensing (electronic surveillance) and coordinated non-kinetic fires (electronic attack) in accordance with spectrum operations objectives by linking Command and Control (C2), operators and sensors across a network interface, and continue to explore uses for Intrepid Tiger II with the Cyber Electronic Warfare Coordination Cell (CEWCC).

FY 2018 Base Plans:

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
The USMC will continue efforts to develop and test Intrepid Tiger II based solutions to radar threats in support of the penetrating jammer mission, culminating in the release of the AN/ALQ-231(V)1 BLK X Radar Jammer for the AV-8B, F/A-18C/D, and MV-22. Updates to major components of the AN/ALQ-231 to address this new threat set commenced in FY 2016 and include upgrades to amplifiers, transceivers, antennas, radios/encryptors, a direction finding array, and the development of a modular pod shell. Other components may also require upgrade/update due to configurations in the AN/ALQ-231(V)1 pod. The USMC will also continue software development efforts that commenced in FY 2017. Efforts will also continue the investigation of the potential for integration of the Intrepid Tiger II capability on the C-130 platform and other platforms such as the CH-53K. Related research efforts will work to develop an enabling capability to facilitate Collaborative Electronic Warfare (CEW) through shared organic, national and space-based Electromagnetic Spectrum (EMS) sensing (electronic surveillance) and coordinated non-kinetic fires (electronic attack) in accordance with spectrum operations objectives by linking Command and Control (C2), operators and sensors across a network interface, and continue to explore uses for Intrepid Tiger II with the Cyber Electronic Warfare Coordination Cell (CEWCC). Additionally, development of the Electronic Warfare Services Architecture (EWSA) in support of increased Intrepid Tiger II targets and missions shall continue in FY 2018. ***FY 2018 OCO Plans:*** N/A					
Title: Unmanned Aircraft System (UAS) Electronic Warfare (EW) Payload ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Efforts will commence to develop an EW Payload for USMC UAS platforms. Platforms include, but are not limited to, the RQ-21A. This project will result in an EW payload capable of conducting, supporting, and coordinating EMS operations in the form of electronic attack and electronic surveillance against Irregular Warfare threats. This payload will be scalable and adaptable for emerging threats and will be interoperable with the	0.000 -	0.000 -	6.000 -	0.000 -	6.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
USMC's EWSA. This new capability will be integrated for MAGTF tactical coordination of cyberspace and EW operations via the Cyber CEWCC. This effort is a new start in FY 2018. ***FY 2018 OCO Plans:*** N/A					
Title: AN/ALQ-231(V)3 UH-1 Jettison Capability ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding for the development and test of a jettison capability for the ALQ-231(V)3 pod on the UH-1 platform. This effort is required to clear a technical deficiency and to enhance aircrew safety. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	0.000 -	3.000 -	0.000 -	0.000 -	0.000 -
Title: Electronic Warfare Services Architecture (EWSA) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding for the accelerated development of the secure, extensible data exchange and hardware protocol that connects the Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) and Signals Intelligence (SIGINT) systems known as the Electronic Warfare Services Architecture	0.000 -	5.500 -	0.000 -	0.000 -	0.000 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
(EWSA). The EWSA is a Services Oriented Architecture that lays the foundation for the Marine Corps' operationalization of the cyberspace domain and the Electromagnetic Spectrum (EMS) by combining EMS dependent capabilities and cyberspace capabilities to support the MAGTF. The backbone of the Commandant's MAGTF EW 2020 Vision, the EWSA provides the MAGTF an organic capability for planning, executing, and assessing the integrated employment of cyberspace and EW capabilities in support of MAGTF operations and the ground scheme of maneuver. Development of this software is critical to achieve the full capability of the MAGTF EW System of Systems (SoS) concept. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Title: Marine Air Ground Tablet (MAGTAB) Integration with AN/ALQ-231(V) ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding to integrate the common operator display known as Marine Air Ground Tablet (MAGTAB) for interface with the Intrepid Tiger II electronic warfare system. This effort funds the porting of the current operational software from the existing operator display to MAGTAB in-line with Marine Corps initiatives for digital interoperability across the force. Furthermore, this initiative reduces the number of electronic devices required by aircrew in the cockpit increasing operator situational awareness and safety. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	0.000 -	1.000 -	0.000 -	0.000 -	0.000 -
Title: MAGTF EW Jammer Techniques Development ***Articles:*** ***FY 2016 Accomplishments:***	0.000 -	4.000 -	2.500 -	0.000 -	2.500 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding to significantly increase the Marine Corps' cyberspace and Electronic Warfare expertise via the development of new and updated jammer techniques. These techniques will be designed to exploit the interrelated cyberspace domain and the electromagnetic spectrum (EMS) through the development, validation, and delivery of Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW)-specific Tactics, Techniques, and Procedures (TTPs) and testing of MAGTF EW systems against existing and emerging threats. Additional efforts include the acquisition of simulators to better emulate threshold and objective threats for MAGTF EW systems. ***FY 2018 Base Plans:*** FY 2018 will continue efforts to significantly increase the Marine Corps' cyberspace and Electronic Warfare expertise via the development of new and updated jammer techniques. These techniques will be designed to exploit the interrelated cyberspace domain and the electromagnetic spectrum (EMS) through the development, validation, and delivery of Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW)-specific Tactics, Techniques, and Procedures (TTPs) and testing of MAGTF EW systems against existing and emerging threats. Additional efforts include the acquisition of simulators to better emulate threshold and objective threats for MAGTF EW systems. ***FY 2018 OCO Plans:*** N/A					
Title: KC-130 Integration for AN/ALQ-231(V)1 Block 1 Communications Jammer ***Articles:***	0.000 -	10.000 -	0.000 -	0.000 -	0.000 -
FY 2016 Accomplishments: N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding for the integration of the ALQ-231(V)1 Block 1 Communications Jammer on the KC-130 platform via the Special Airborne Mission Installation and Response (SABIR) arm. This integration answers an urgent fleet requirement put forth in validated Urgent Universal Need Statement (UUNS) MROC DM 21-2016. ***FY 2018 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 OCO Plans:*** N/A					
Title: Electronic Warfare (EW) Range Improvements and Upgrades ***Articles:*** ***FY 2016 Accomplishments:*** N/A ***FY 2017 Plans:*** President's Budget 2017 as amended provides funding for hardware, software and equipment purchases required to improve Electronic Warfare (EW) Ranges in order to ensure that Marine Air Ground Task Force (MAGTF) Electronic Warfare (EW) capabilities can be fully tested against actual and simulated threats. These upgrades are required to ensure the effectiveness of the MAGTF EW system-of-systems warfighting concept against the spectrum of threats to the MAGTF. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	0.000 -	20.500 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	0.000	64.817	29.643	0.000	29.643

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0587: *MAGTF EW For Aviation*	7.680	21.976	10.111	-	10.111	11.810	41.694	31.329	34.061	59.337	306.795

Remarks

D. Acquisition Strategy

This project unit is part of United States Marine Corps I(USMC) ed 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 Intrepid Tiger II(V)1, Intrepid Tiger II(V)2, Intrepid Tiger II(V)3, Collaborative Electronic Warfare (EW)/

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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EW Battle Management, EW Payload, and EW Service Architecture (formerly Collaborative Online Reconnaissance Provider Operationally Responsive Attack Link). These programs are the Marine Corps' initial steps to create systems to distribute EW capability across the battle space.

E. Performance Metrics

Continuation of research into Engineering Change Proposals (ECPs) for capability upgrades for AN/ALQ-231(V)1 and AN/ALQ-231(V)3 Intrepid Tiger II pods. Commencement of research to develop an EW payload for USMC Unmanned Aircraft Systems.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Intrepid Tiger BLK X Hardware Development - Amplifiers	WR	NAWCWD : Point Mugu, CA	0.000	0.000		1.000	May 2017	1.000	Nov 2017	-		1.000	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Hardware Development - Transceivers	WR	NAWCWD : Point Mugu, CA	0.000	0.000		3.000	May 2017	2.500	Nov 2017	-		2.500	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Hardware Development - Antennas	WR	NAWCWD : Point Mugu, CA	0.000	0.000		1.500	May 2017	1.250	Nov 2017	-		1.250	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Hardware Development - Modular Pod Shell	WR	NAWCWD : Point Mugu, CA	0.000	0.000		2.000	May 2017	1.750	Nov 2017	-		1.750	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Hardware Development - Radios/Encryptors	WR	NAWCWD : Point Mugu, CA	0.000	0.000		2.000	May 2017	1.750	Nov 2017	-		1.750	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Hardware Development - Direction Finding Array	WR	NAWCWD : Point Mugu, CA	0.000	0.000		2.000	May 2017	1.750	Nov 2017	-		1.750	Continuing	Continuing	Continuing
UAS EW Payload Hardware Development	WR	NAWCWD : Point Mugu, CA	0.000	0.000		0.000		2.548	Nov 2017	-		2.548	Continuing	Continuing	Continuing
UAS EW Payload Software Development	WR	NAWCWD : Point Mugu, CA	0.000	0.000		0.000		1.323	Nov 2017	-		1.323	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.400	Nov 2016	1.805	Nov 2017	-		1.805	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCWD : Point Mugu, CA	0.000	0.000		19.437	Nov 2016	9.485	Nov 2017	-		9.485	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Crane, IN	0.000	0.000		0.150	Apr 2017	0.050	Nov 2017	-		0.050	0.000	0.200	-
Systems Engineering	WR	NRL : Washington, DC	0.000	0.000		1.000	Apr 2017	0.250	Nov 2017	-		0.250	0.000	1.250	-
Aircraft Integration	SS/CPIF	Lockheed Martin : Greenville, SC	0.000	0.000		3.000	Jun 2017	0.000		-		0.000	0.000	3.000	3.000
		Subtotal	0.000	0.000		36.487		25.461		-		25.461	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Growth in Systems Engineering efforts at NAWCWD Point Mugu, CA and NAWCAD Patuxent River, MD between FY 2017 and FY 2018 is due to the start of Unmanned Aircraft Systems Payload Development efforts in FY 2018.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support - Jammer Techniques Development	SS/CPFF	Johns Hopkins University : Maryland	0.000	0.000		0.000		0.500	Dec 2017	-		0.500	0.000	0.500	-
Development Support	Various	Various : Various	0.000	0.000		0.425	Nov 2016	0.617	Nov 2017	-		0.617	Continuing	Continuing	Continuing
Eng & Tech Services	Various	Various : Various	0.000	0.000		0.103	Nov 2016	0.330	Nov 2017	-		0.330	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.528		1.447		-		1.447	-	-	-

Remarks

Growth in Support between FY 2017 and FY 2018 is due to the start of Unmanned Aircraft Systems Payload Development efforts in FY 2018.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Intrepid Tiger BLK X Flight Testing	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Flight Testing	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		1.235	Nov 2017	-		1.235	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Flight Testing	WR	NAWCWD : Point Mugu, CA	0.000	0.000		0.000		1.500	Nov 2017	-		1.500	Continuing	Continuing	Continuing
Intrepid Tiger BLK X Testing	WR	NAWCWD : Point Mugu, CA	0.000	0.000		1.052	May 2017	0.000		-		0.000	Continuing	Continuing	Continuing
UH-1 Jettison Flight Test	WR	NAWCWD : China Lake, CA	0.000	0.000		2.250	Apr 2017	0.000		-		0.000	0.000	2.250	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
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*

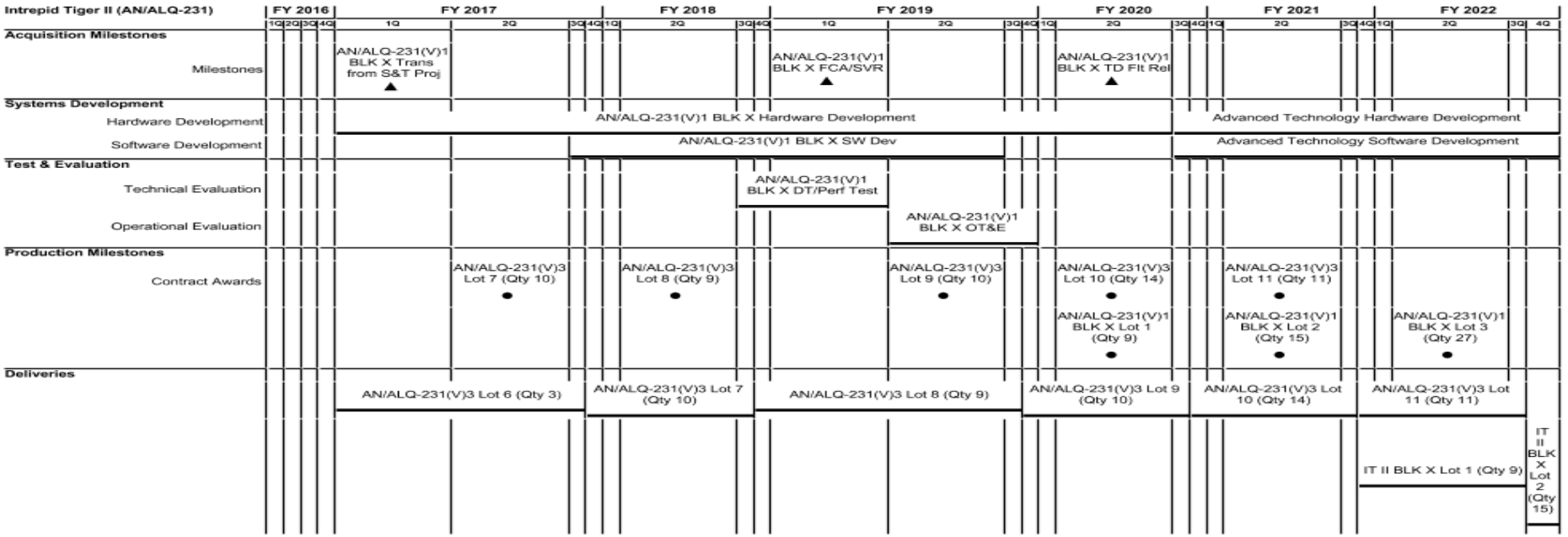
Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Intrepid Tiger KC-130 Integration Testing	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.500	Apr 2017	0.000		-		0.000	0.000	0.500	-
Intrepid Tiger KC-130 Integration Testing	WR	NAWCWD : Point Mugu, CA	0.000	0.000		1.000	Apr 2017	0.000		-		0.000	0.000	1.000	-
Intrepid Tiger KC-130 Integration Flight Test	WR	NAWCWD : China Lake, CA	0.000	0.000		2.500	Apr 2017	0.000		-		0.000	0.000	2.500	-
Test Range Upgrades	WR	NAWCWD : Point Mugu, CA	0.000	0.000		10.250	Apr 2017	0.000		-		0.000	0.000	10.250	-
Test Range Upgrades	WR	NAWCWD : China Lake, CA	0.000	0.000		10.250	Apr 2017	0.000		-		0.000	0.000	10.250	-
		Subtotal	0.000	0.000		27.802		2.735		-		2.735	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		64.817		29.643		-		29.643	-	-	-

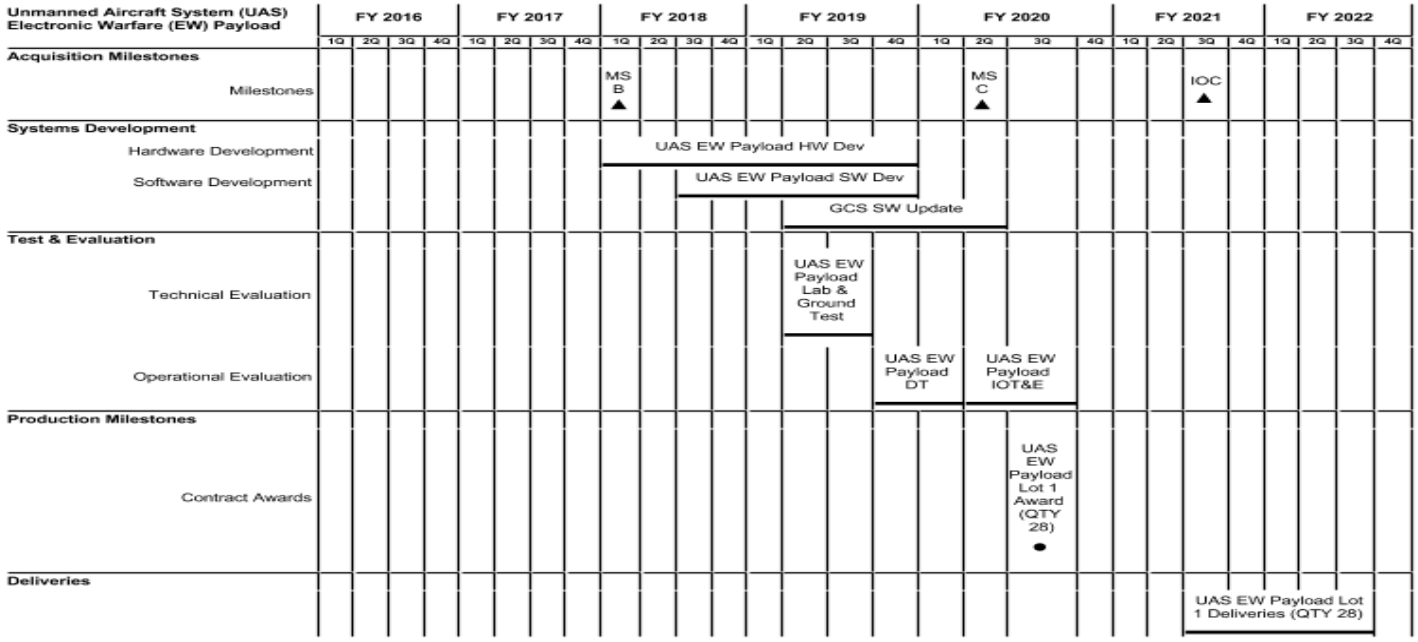
Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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*



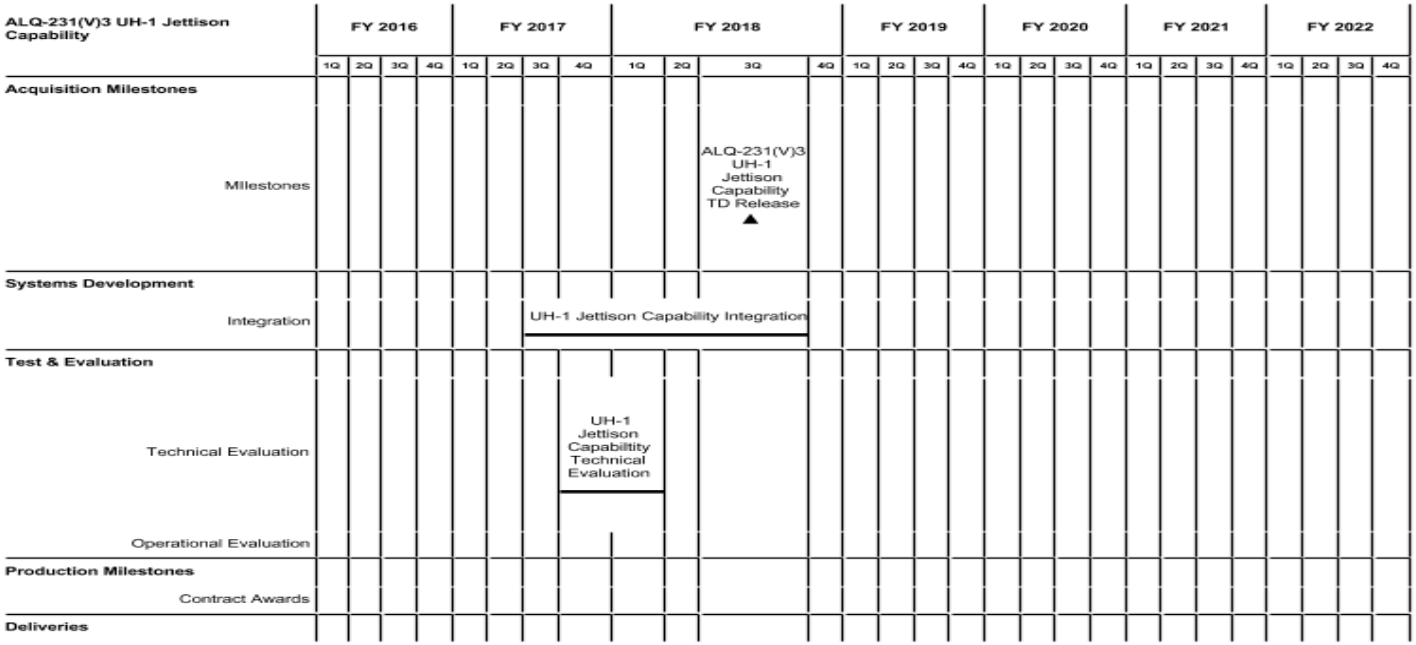
2018PB - 0604270N - 3327 AN/ALQ-231(V)1 BLK X abbreviated to IT II BLK X due to space constraints

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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*



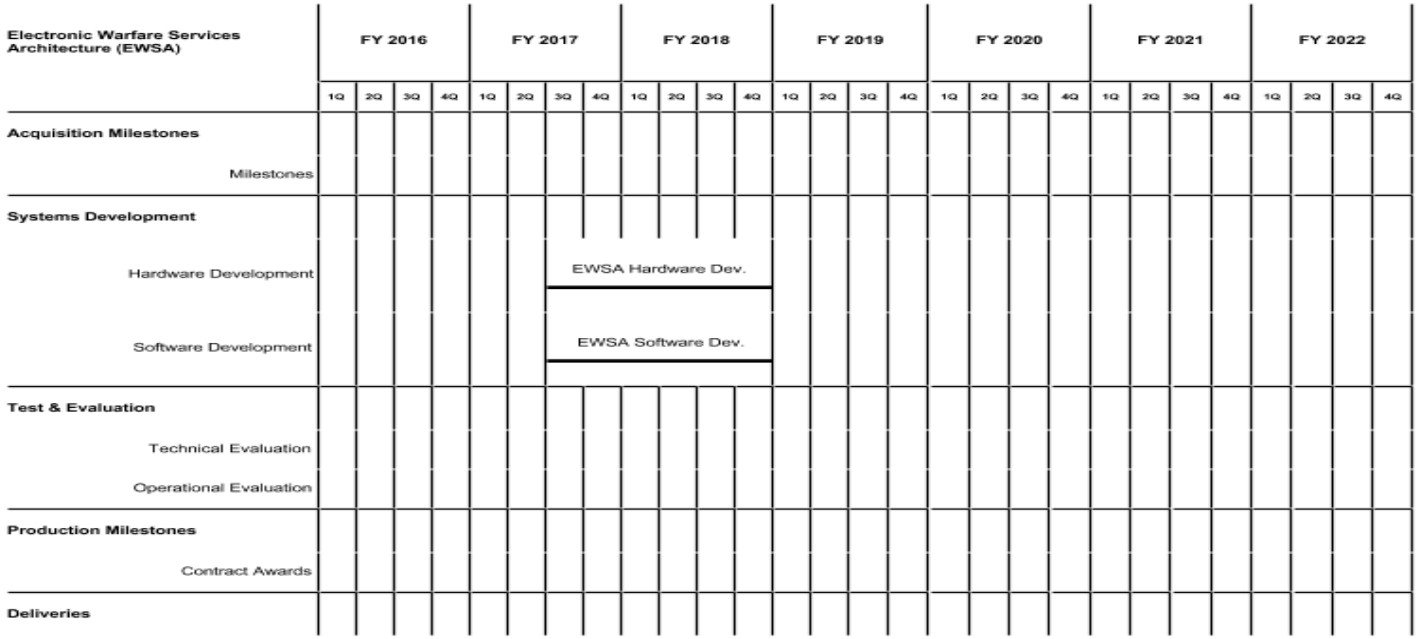
2018PB - 0604270N - 3327

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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*



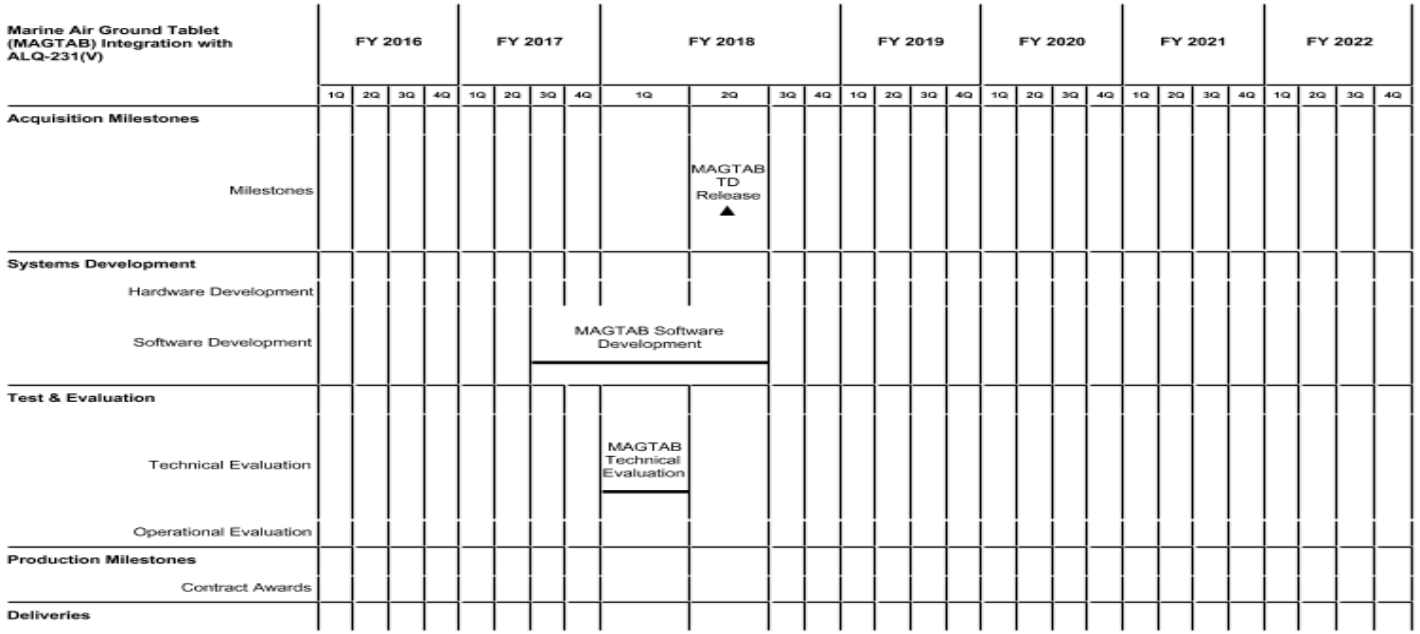
2018PB - 0604270N - 3327

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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*



2018PB - 0604270N - 3327

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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*



2018PB - 0604270N - 3327

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
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*

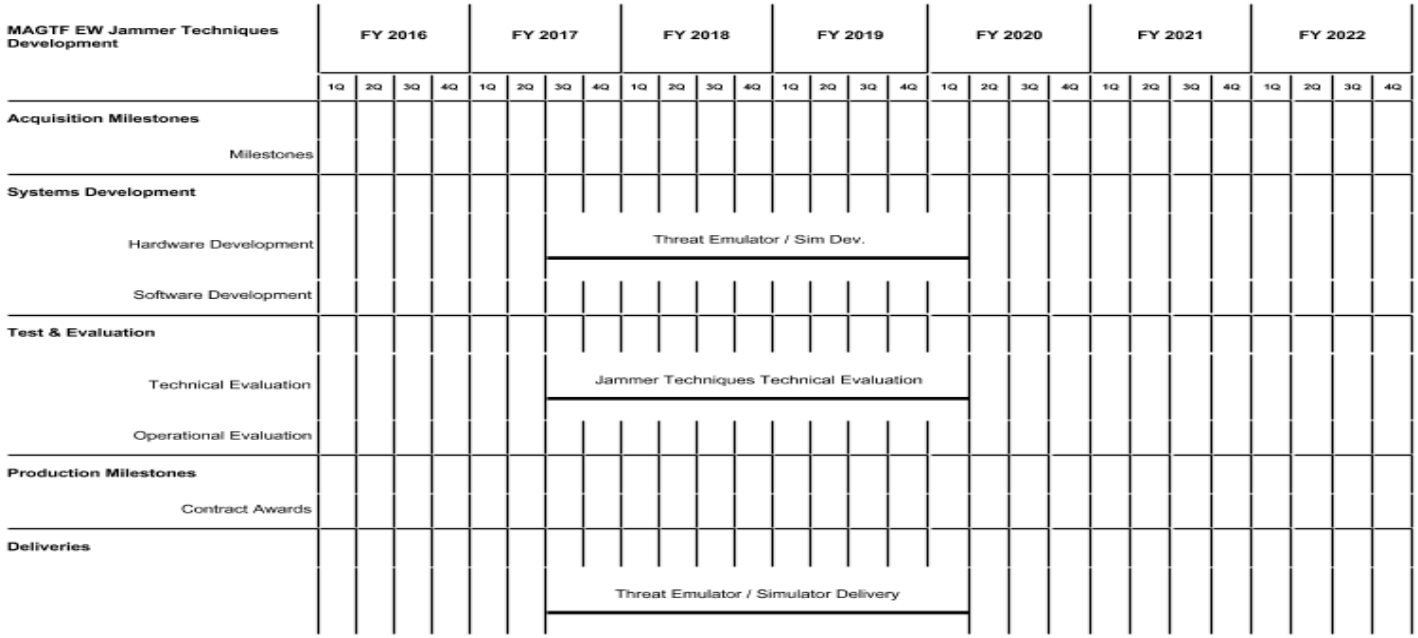


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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

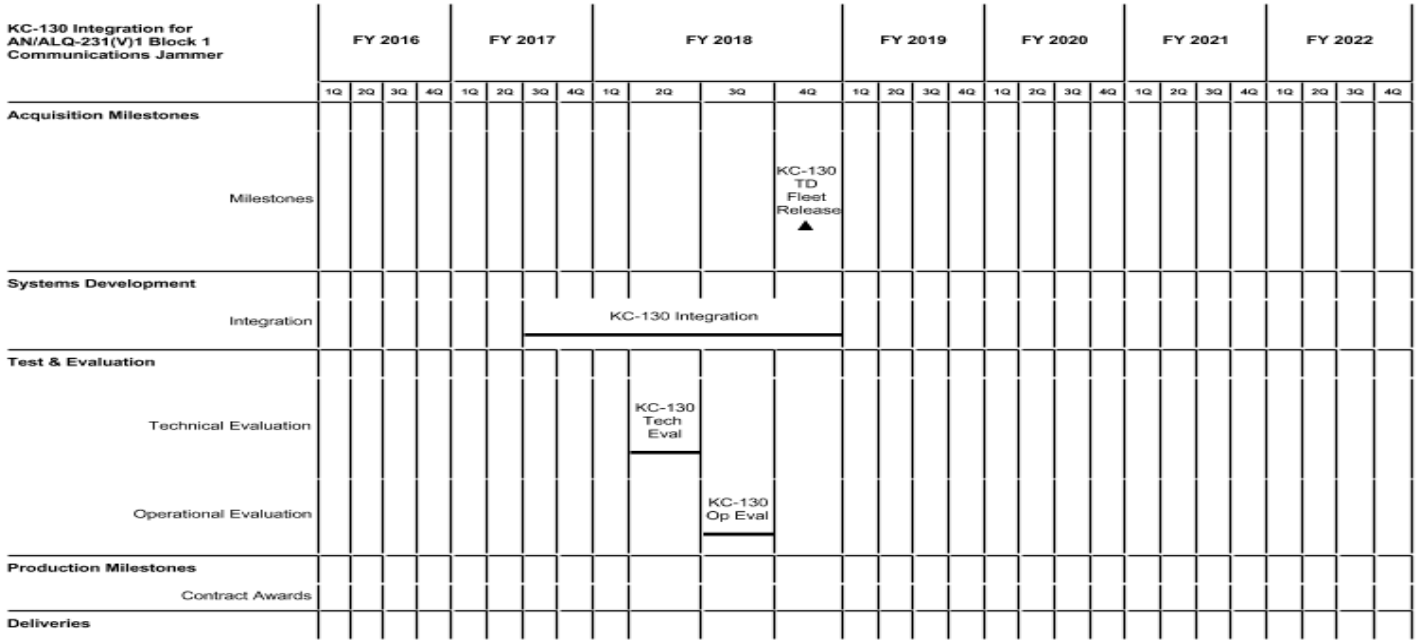

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

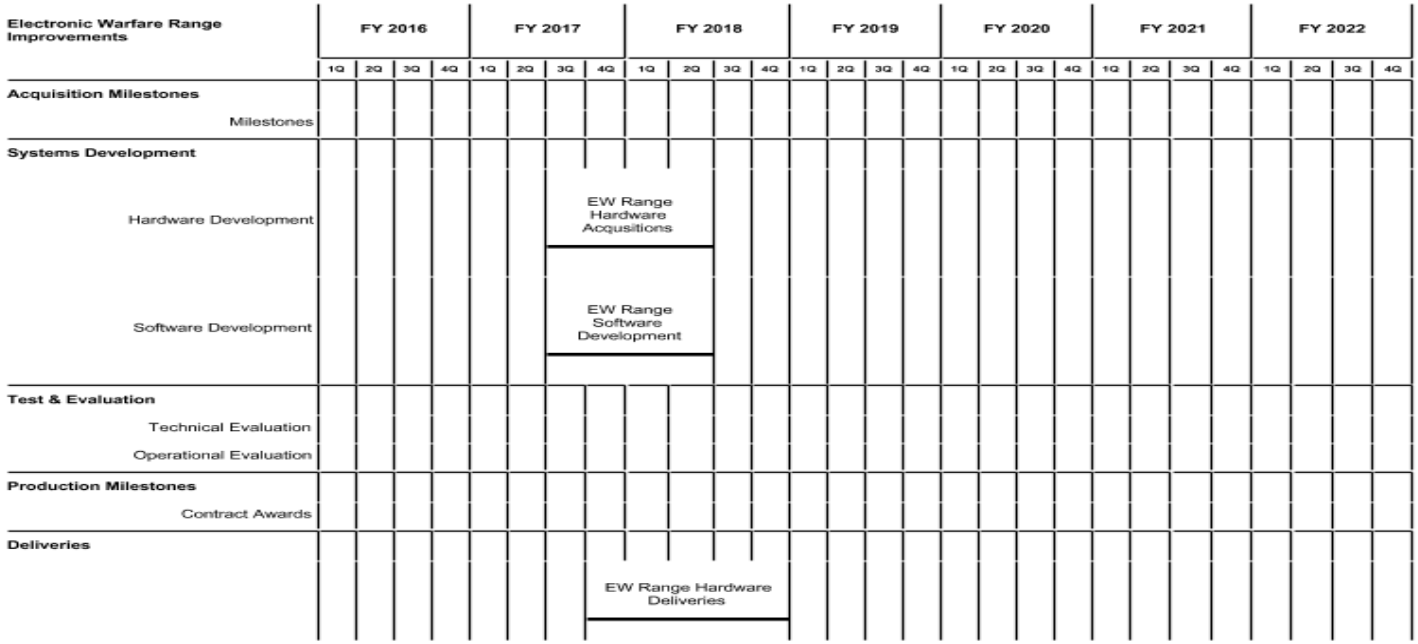

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604270N / *Electronic Warfare (EW) Dev*	**Project (Number/Name)** 3327 / *MAGTF EW Aviation Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Intrepid Tiger II (AN/ALQ-231)				
Acquisition Milestones: Milestones: AN/ALQ-231(V)1 BLK X Transition from S&T project	1	2017	1	2017
Acquisition Milestones: Milestones: AN/ALQ-231(V)1 BLK X Functional Configuration Audit / System Verification Review	1	2019	1	2019
Acquisition Milestones: Milestones: AN/ALQ-231(V)1 BLK X TD Fleet Release	2	2020	2	2020
Systems Development: Hardware Development: AN/ALQ-231(V)1 BLK X Hardware Development	1	2017	2	2020
Systems Development: Hardware Development: Advanced Technology Hardware Development	3	2020	4	2022
Systems Development: Software Development: AN/ALQ-231(V)1 BLK X Software Development	3	2017	2	2019
Systems Development: Software Development: Advanced Technology Software Development	3	2020	4	2022
Test & Evaluation: Technical Evaluation: AN/ALQ-231(V)1 BLK X Developmental/ Performance Test	3	2018	1	2019
Test & Evaluation: Operational Evaluation: AN/ALQ-231(V)1 BLK X OT&E	2	2019	4	2019
Production Milestones: Contract Awards: AN/ALQ-231(V)3 Production Lot 7 (Qty 10)	2	2017	2	2017
Production Milestones: Contract Awards: AN/ALQ-231(V)3 Production Lot 8 (Qty 9)	2	2018	2	2018
Production Milestones: Contract Awards: AN/ALQ-231(V)3 Production Lot 9 (Qty 10)	2	2019	2	2019
Production Milestones: Contract Awards: AN/ALQ-231(V)3 Production Lot 10 (Qty 14)	2	2020	2	2020
Production Milestones: Contract Awards: AN/ALQ-231(V)3 Production Lot 11 (Qty 11)	2	2021	2	2021
Production Milestones: Contract Awards: AN/ALQ-231(V)1 BLK X Production Lot 1 (9 units)	2	2020	2	2020

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Milestones: Contract Awards: AN/ALQ-231(V)1 BLK X Production Lot 2 (15 units)	2	2021	2	2021
Production Milestones: Contract Awards: AN/ALQ-231(V)1 BLK X Production Lot 3 (27 units)	2	2022	2	2022
Deliveries: AN/ALQ-231(V)3 Lot 6 Deliveries (Qty 3)	1	2017	3	2017
Deliveries: AN/ALQ-231(V)3 Lot 7 Deliveries (Qty 10)	4	2017	3	2018
Deliveries: AN/ALQ-231(V)3 Lot 8 Deliveries (Qty 9)	4	2018	3	2019
Deliveries: AN/ALQ-231(V)3 Lot 9 Deliveries (Qty 10)	4	2019	3	2020
Deliveries: AN/ALQ-231(V)3 Lot 10 Deliveries (Qty 14)	4	2020	3	2021
Deliveries: AN/ALQ-231(V)3 Lot 11 Deliveries (Qty 11)	4	2021	3	2022
Deliveries: AN/ALQ-231(V)1 BLK X Lot 1 Deliveries (Qty 9)	4	2021	3	2022
Deliveries: AN/ALQ-231(V)1 BLK X Lot 2 Deliveries (Qty 15)	4	2022	4	2022
Unmanned Aircraft System (UAS) Electronic Warfare (EW) Payload				
Acquisition Milestones: Milestones: UAS EW Payload MS B	1	2018	1	2018
Acquisition Milestones: Milestones: UAS EW Payload MS C	2	2020	2	2020
Acquisition Milestones: Milestones: UAS EW Payload IOC	3	2021	3	2021
Systems Development: Hardware Development: UAS EW Payload Hardware Development	1	2018	4	2019
Systems Development: Software Development: UAS EW Payload Software Development	3	2018	4	2019
Systems Development: Software Development: Ground Control Station Software Update	2	2019	2	2020
Test & Evaluation: Technical Evaluation: UAS EW Payload Lab & Ground Test	2	2019	3	2019
Test & Evaluation: Operational Evaluation: UAS EW Payload Development Test	4	2019	1	2020
Test & Evaluation: Operational Evaluation: UAS EW Payload IOT&E	2	2020	3	2020
Production Milestones: Contract Awards: UAS EW Payload Lot 1 Award (QTY 28)	3	2020	3	2020
Deliveries: UAS EW Payload Lot 1 Deliveries (QTY 28)	3	2021	3	2022

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ALQ-231(V)3 UH-1 Jettison Capability				
Acquisition Milestones: MIlestones: ALQ-231(V)3 UH-1 Jettison Capability TD Release	3	2018	3	2018
Systems Development: Integration: UH-1 Jettison Capability Integration	3	2017	3	2018
Test & Evaluation: Technical Evaluation: UH-1 Jettison Capabiltity Technical Evaluation	4	2017	1	2018
Electronic Warfare Services Architecture (EWSA)				
Systems Development: Hardware Development: Electronic Warfare Services Architecture Hardware Development	3	2017	4	2018
Systems Development: Software Development: Electronic Warfare Services Architecture Software Development	3	2017	4	2018
Marine Air Ground Tablet (MAGTAB) Integration with ALQ-231(V)				
Acquisition Milestones: Milestones: MAGTAB TD Release	2	2018	2	2018
Systems Development: Software Development: MAGTAB Software Development	3	2017	2	2018
Test & Evaluation: Technical Evaluation: MAGTAB Technical Evaluation	1	2018	1	2018
MAGTF EW Jammer Techniques Development				
Systems Development: Hardware Development: Threat Emulator / Simulator Development	3	2017	1	2020
Test & Evaluation: Technical Evaluation: Jammer Techniques Technical Evaluation	3	2017	1	2020
Deliveries: Threat Emulator / Simulator Delivery	3	2017	1	2020
KC-130 Integration for AN/ALQ-231(V)1 Block 1 Communications Jammer				
Acquisition Milestones: Milestones: AN/ALQ-231(V)1 Block 1 on KC-130 TD Fleet Release	4	2018	4	2018
Systems Development: Integration: KC-130 Integration	3	2017	4	2018
Test & Evaluation: Technical Evaluation: KC-130 Technical Evaluation	2	2018	2	2018
Test & Evaluation: Operational Evaluation: KC-130 Operational Evaluation	3	2018	3	2018
Electronic Warfare Range Improvements				

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Systems Development: Hardware Development: Electronic Warfare (EW) Range Improvements Hardware Acquisitions	3	2017	2	2018
Systems Development: Software Development: Electronic Warfare (EW) Range Improvements Software Development	3	2017	2	2018
Deliveries: Electronic Warfare (EW) Range Improvements Hardware Deliveries	4	2017	4	2018

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3371: *MAGTF EW Interoperability Development*	0.000	0.000	1.657	1.639	-	1.639	0.947	0.968	0.990	1.012	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

PU 3371 was created in FY 2015 to administratively highlight specific work that was being done in Program Element (PE) 0604376M, Project Unit (PU) 3327. This PU has been moved to PE 0604270N in FY 2017 and continues efforts previously funded under PU 3327. It is not a new start for FY 2017.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Software Reprogrammable Payload	0.000	1.657	1.639	0.000	1.639
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Begin the development of the Spiral 3 SRP on the United States Marine Corps small form factor required platforms.					
FY 2018 Base Plans: Continue the development of the reduced form factor SRP for the identified platforms that cannot support the Spiral 2 form factor and field evaluation of the Spiral 2.					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	1.657	1.639	0.000	1.639

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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)

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.

E. Performance Metrics

Successful completion of the Spiral 2 development and demonstration onboard MV-22 test platform.