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Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Navy	DATE: February 2012
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APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0204152N: <i>E-2 Squadrons</i>
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COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	20.774	6.687	8.610	-	8.610	3.816	7.098	14.736	12.703	Continuing	Continuing
0463: <i>E2C Improvements</i>	20.774	6.687	8.610	-	8.610	3.816	7.098	14.736	12.703	Continuing	Continuing

A. Mission Description and Budget Item Justification

E-2 Improvements (0463) provides for incorporation of technologies for the evolution of E-2 Battle Management and Command and Control capabilities in support of naval warfare command and control requirements. It funds developments for the modification or replacement of Weapon Replaceable Assemblies of currently installed subsystems, as well as providing for experimentation with narrowband and wideband internet protocol (IP) concepts, to include technologies such as High Frequency Secure IP Router Network, VRC-99 digital IP radio as a surrogate to the Joint Tactical Radio System, machine-to-machine digital data communications, Advanced Digital Networking System, cooperative and non-cooperative identification, and open architecture hardware and software computing environments. It also provided funds for Automatic Identification System as a broadcast transponder system to transfer information off board to other platform systems. These efforts have laid the foundation for growth to provide additional functional capabilities satisfying evolving operational requirements, e.g., Airborne Networking, Joint Sensor Netting and Track Management, Tactical Decision Aids, Advanced communications, and permits the evolutionary growth of a Combat Identification and Theater Air and Missile Defense Capability.

A Core Open Architecture capability will modernize existing Mission Computer and Operational Flight Program architecture, preserve interfaces to future E-2 weapon systems modification, simplify maintenance and upgrades of memory and operating systems (hardware/software independence), add an improved networking backbone to quickly field future interoperable warfighting applications and utilize open and commercially adopted standards and protocols to the maximum extent possible.

An In Flight Refueling (IFR) capability will allow the E-2 to receive fuel from various organic and non-organic tanker aircraft. It provides Expanded Battle Space Surveillance and Targeting through significantly enhanced persistence and increased flexibility (range & endurance). IFR will better enable the E-2 to fully support current Carrier Strike Group /Joint 24/7 Theater Operations by providing more versatile stationing and/or forward basing options. Previous domestic E-2 concept demonstration effort successfully established the feasibility of tanking behind the F/A-18E/F and KC-130 aircraft.

Radar Improvement Program provides funding to develop and field improvements to APS-145 radar to address reliability and obsolescence and keep them viable until aircraft retirement.

Link-16/Cooperative Engagement Capability Interoperability Program funding is to address most severe data link related interoperability. This will significantly improve the quality of the tactical surveillance picture, reduce the possibility of leakers, mitigate Blue on Blue engagements, and mid-identification of tracks. Provides stable sensor fusion foundation to support sensor/weapon coordination requirements.

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B. Program Change Summary (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	19.011	6.696	1.634	-	1.634
Current President's Budget	20.774	6.687	8.610	-	8.610
Total Adjustments	1.763	-0.009	6.976	-	6.976
• Congressional General Reductions	-	-0.009			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.230	-			
• SBIR/STTR Transfer	-0.360	-			
• Program Adjustments	-	-	6.948	-	6.948
• Rate/Misc Adjustments	-	-	0.028	-	0.028
• Congressional General Reductions Adjustments	-0.107	-	-	-	-

Change Summary Explanation

Technical: Not applicable.

Schedule: Link-16/Cooperative Engagement Capability more accurately reflects the time needed for systems engineering and software development with cross coordination of multiple programs.

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy									DATE: February 2012		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0204152N: E-2 Squadrons				PROJECT 0463: E2C Improvements			
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
0463: E2C Improvements	20.774	6.687	8.610	-	8.610	3.816	7.098	14.736	12.703	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
A. Mission Description and Budget Item Justification											
<p>E-2 Improvements (0463) provides for incorporation of technologies for the evolution of E-2 Battle Management and Command and Control capabilities in support of naval warfare command and control requirements. It funds developments for the modification or replacement of Weapon Replaceable Assemblies of currently installed subsystems, as well as providing for experimentation with narrowband and wideband internet protocol (IP) concepts, to include technologies such as High Frequency Secure IP Router Network, VRC-99 digital IP radio as a surrogate to the Joint Tactical Radio System, machine-to-machine digital data communications, Advanced Digital Networking System, cooperative and non-cooperative identification, and open architecture hardware and software computing environments. It also provided funds for Automatic Identification System as a broadcast transponder system to transfer information off board to other platform systems. These efforts have laid the foundation for growth to provide additional functional capabilities satisfying evolving operational requirements, e.g., Airborne Networking, Joint Sensor Netting and Track Management, Tactical Decision Aids, Advanced communications, and permits the evolutionary growth of a Combat Identification and Theater Air and Missile Defense Capability.</p> <p>A Core Open Architecture capability will modernize existing Mission Computer and Operational Flight Program architecture, preserve interfaces to future E-2 weapon systems modification, simplify maintenance and upgrades of memory and operating systems (hardware/software independence), add an improved networking backbone to quickly field future interoperable warfighting applications and utilize open and commercially adopted standards and protocols to the maximum extent possible.</p> <p>An In Flight Refueling (IFR) capability will allow the E-2 to receive fuel from various organic and non-organic tanker aircraft. It provides Expanded Battle Space Surveillance and Targeting through significantly enhanced persistence and increased flexibility (range & endurance). IFR will better enable the E-2 to fully support current Carrier Strike Group /Joint 24/7 Theater Operations by providing more versatile stationing and/or forward basing options. Previous domestic E-2 concept demonstration effort successfully established the feasibility of tanking behind the F/A-18E/F and KC-130 aircraft.</p> <p>Radar Improvement Program provides funding to develop, and field improvements to APS-145 radar to address reliability and obsolescence and keep them viable until aircraft retirement.</p> <p>Link-16/Cooperative Engagement Capability Interoperability Program funding is to address most severe data link related interoperability. This will significantly improve the quality of the tactical surveillance picture, reduce the possibility of leakers, mitigate Blue on Blue engagements, and mid-identification of tracks. Provides stable sensor fusion foundation to support sensor/weapon coordination requirements.</p>											
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2011	FY 2012	FY 2013	
Title: Airborne Battlefield Command and Control								5.738	3.507	1.202	

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2011	FY 2012	FY 2013
<div>Articles:</div> <div>Description: Funds development and demonstration of E-2 airborne Joint Sensor Netting and Track Management (including Network Centric Collaborative Targeting), Internet Protocol (IP) networking concepts (including Advanced Digital Networking Systems, and IP enabled communications systems), machine-to-machine interface, open architecture computing environment, network applications, tactical decision aids, combat identification technologies, on and off-board data fusion capabilities, and advanced mission computer and communications technologies airborne demonstrations.</div> <div>FY 2011 Accomplishments: Funded the continuation of development efforts and a Empire Challenge exercise and a Limited Objective Experiment.</div> <div>FY 2012 Plans: Funds are for development efforts and a Joint Expeditionary Force Exercise and a Limited Objective Experiment.</div> <div>FY 2013 Plans: Funding is for developmental efforts and a Trident Warrior Experiment and a Limited Objective Experiment.</div>		0	0	0
<div>Title: In Flight Refueling (IFR)</div> <div>Articles:</div> <div>Description: Funds the system development and testing to support the incorporation of In Flight Refueling capability into the E-2 aircraft. Emphasis during system development is on system redesign, air vehicle design, human systems integration and design, including interior/lighting modifications and seat replacement. Flight testing is required to verify system meets requirements and evaluate field of view, thermal and aerodynamic loads, kinematic performance, and handling qualities. FY12 funding moves to PE 0604234N, E-2D Advanced Hawkeye.</div> <div>FY 2011 Accomplishments: Funded the continuation of system development efforts.</div>		1.197 0	-	-
<div>Title: E-2 Core Open Architecture (OA)</div> <div>Articles:</div> <div>Description: Funding supports the development, integration and test of an Open Architecture distributed computing environment and Internet Protocol networking infrastructure.</div> <div>FY 2011 Accomplishments: Funded the continuation of system integration and test and the beginning of Trainer Integration.</div>		5.556 0	-	-
Title: E-2 High Frequency (HF) Internet Protocol (IP)		2.212	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)				FY 2011	FY 2012	FY 2013
<div>Articles:</div> <div>Description: Funds the development, integration and test of High Frequency (HF) radio and Mission Computer hardware and software modifications and additions to provide an E-2 HF digital data communications path, allowing for E-2 connectivity with other High Frequency Internet Protocol (HFIP) users.</div> <div>FY 2011 Accomplishments: Funded the HFIP trainers.</div>				0		
<div>Title: Radar Improvements Program</div> <div>Description: Funds development, integration, test, and fielding of new components within the E-2C radar to address obsolete Weapon Replaceable Assemblies (WRA) that are expected to be unsupportable in the near term. Such improvements will keep the APS-145 radar viable until 2026, the projected E-2C retirement date. This funding also supports necessary modifications within the APS-145 Radar Test Bench System.</div> <div>FY 2011 Accomplishments: Funded the continuation of the design and development efforts and ground and flight testing.</div> <div>FY 2012 Plans: Funds the continuation of ground and flight testing and software deployment.</div>				6.071 0	2.875 0	-
<div>Title: Link-16/Cooperative Engagement Capability (CEC) Interoperability</div> <div>Description: New start program in FY12 for design, implementation, test and analysis of Link-16/CEC related interoperability issues.</div> <div>FY 2012 Plans: Funds the systems engineering development efforts.</div> <div>FY 2013 Plans: Funding provides continuing systems engineering development efforts.</div>				-	0.305 0	7.408 0
Accomplishments/Planned Programs Subtotals				20.774	6.687	8.610

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APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0204152N: E-2 Squadrons				PROJECT 0463: E2C Improvements			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• APN/0195: E-2D AHE	1,104.995	1,044.834	984.677	0.000	984.677	1,151.265	1,396.652	1,346.115	1,519.352	5,834.916	19,326.794
• APN/0605: Initial Spares - E-2	42.287	30.012	55.383	0.000	55.383	25.298	21.934	26.473	28.745	118.422	593.426
• APN/0544: E-2 Series	66.557	29.215	16.322	0.000	16.322	31.132	35.682	35.650	36.229	49.679	1,595.309
D. Acquisition Strategy											
The Core Open Architecture (Core OA) Acquisition Strategy was signed by Milestone Decision Authority (MDA), Program Executive Officer Tactical Aircraft Programs (PEO (T)) on 11 September 2008.											
The In Flight Refueling (IFR) Acquisition Strategy was signed by the MDA, PEO(T) on 24 October 2008.											
E. Performance Metrics											
Successfully complete Core OA System Integration and Test and begin Trainer Integration. Successfully develop and deliver Trainers in support of the High Frequency Internet Protocol program. Successfully complete the Pre - System Development & Demonstration phase in support of the IFR program. Successfully complete developmental testing and deploy the Universal Automated Information System (UAIS). Successfully complete Design Development for the Radar Improvements program and begin ground and flight testing. Successfully complete Design Development for the Link-16/Cooperative Engagement Capability Interoperability program.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy **DATE:** February 2012

APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0204152N: <i>E-2 Squadrons</i>	PROJECT 0463: <i>E2C Improvements</i>
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Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development4	Various	Various:Various	18.444	0.752	Nov 2011	-		-		-	0.000	19.196	
Primary Hardware Development	SS/FFP	Lockheed Martin:Owego, NY	4.490	-		-		-		-	0.000	4.490	4.490
Ancillary Hardware Development	Various	Various:Various	0.300	0.440	Jan 2012	-		-		-	0.000	0.740	
Aircraft Integration2	Various	Various:Various	0.300	-		-		-		-	0.000	0.300	
Training Development	TBD	TBD:TBD	-	-		-		-		-	3.077	3.077	3.077
Prior Yr Costs No longer funded in FYDP	Various	Various:Various	9.098	-		-		-		-	0.000	9.098	
Subtotal			32.632	1.192		-		-		-	3.077	36.901	

Remarks

Primary Hardware Development4 - various contractors and award dates throughout the fiscal year.
Totals may not add due to rounding.

Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various	Various:Various	0.934	0.346	Dec 2011	0.064	Nov 2012	-		0.064	0.000	1.344	
Development Support	TBD	TBD:TBD	-	-		-		-		-	2.194	2.194	2.194
Software Development4	TBD	TBD:TBD	-	0.051	Nov 2011	5.931	Nov 2012	-		5.931	21.995	27.977	27.977
Engineering & Technical Services (ETS)	Various	Various:Various	10.641	1.013	Dec 2011	0.477	Nov 2012	-		0.477	0.262	12.393	
Government Engineering Support2	Various	Various:Various	13.980	0.555	Nov 2011	-		-		-	0.000	14.535	
Government Engineering Support3	WR	Naval Air Warfare Center Aircraft Division (NAWCAD:Pax River, MD)	12.116	0.975	Nov 2011	1.069	Nov 2012	-		1.069	3.737	17.897	
Integrated Logistics Support	Various	Various:Various	2.252	0.093	Dec 2011	0.060	Dec 2012	-		0.060	0.496	2.901	

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Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Costs No Longer Funded in FYDP	Various	Various:Various	55.142	-		-		-		-	0.000	55.142	
Subtotal			95.065	3.033		7.601		-		7.601	28.684	134.383	
Remarks Totals may not add due to rounding.													
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (T&E)2	Various	Various:Various	11.961	0.418	Nov 2011	0.539	Nov 2012	-		0.539	0.200	13.118	
Developmental T & E3	WR	NAWCAD:Pax River, MD	9.395	0.859	Nov 2011	-		-		-	0.000	10.254	
Developmental T&E Engineering Technical Services (ETS)4	Various	Various:Various	1.953	0.313	Dec 2011	-		-		-	0.000	2.266	
Developmental T & E	TBD	TBD:TBD	-	-		-		-		-	5.969	5.969	5.969
Prior Year Costs No Longer Funded in FYDP	Various	Various:Various	1.420	-		-		-		-	0.000	1.420	
Subtotal			24.729	1.590		0.539		-		0.539	6.169	33.027	
Remarks Totals may not add due to rounding.													
Management Services (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support	WR	NAWCAD:Pax River, MD	5.098	0.407	Nov 2011	0.292	Nov 2012	-		0.292	0.200	5.997	

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Management Services (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support1	Various	Various:Various	6.258	0.292	Nov 2011	0.081	Nov 2012	-		0.081	0.054	6.685	
Program Management Support-MSS2	C/CPFF	Wyle Labs:Huntsville, AL	2.017	0.060	Dec 2011	0.052	Dec 2012	-		0.052	0.049	2.178	2.178
Program Management Support-MSS3	Various	Various:Various	5.662	0.058	Dec 2011	-		-		-	0.000	5.720	
Travel	Various	Various:Various	0.758	0.055	Oct 2011	0.045	Oct 2012	-		0.045	0.120	0.978	
Prior Year Costs No Longer Funded in FYDP	Various	Various:Various	0.419	-		-		-		-	0.000	0.419	
Subtotal			20.212	0.872		0.470		-		0.470	0.423	21.977	

Remarks

Program Management Support1- various contractors and award dates throughout the fiscal year.
Totals may not add due to rounding.

	Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	172.638	6.687		8.610		-		8.610	38.353	226.288	

Remarks

Totals may not add due to rounding.

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0204152N: <i>E-2 Squadrons</i>	PROJECT 0463: <i>E2C Improvements</i>

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0204152N: <i>E-2 Squadrons</i>	PROJECT 0463: <i>E2C Improvements</i>

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Exhibit R-4A, RDT&E Schedule Details: PB 2013 Navy			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0204152N: <i>E-2 Squadrons</i>	PROJECT 0463: <i>E2C Improvements</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>E2C Improvements (1)</i>				
Systems Development: Hardware Development: Airborne Battlefield C2 - Development	1	2011	1	2014
Systems Development: Hardware Development: Airborne Battlefield C2 - Trident Warrior FY11	3	2011	3	2011
Systems Development: Hardware Development: Airborne Battlefield C2 - LOE FY11	4	2011	4	2011
Systems Development: Hardware Development: Airborne Battlefield C2 - JEFX FY12	3	2012	3	2012
Systems Development: Hardware Development: Airborne Battlefield C2 - LOE FY12	4	2012	4	2012
Systems Development: Hardware Development: Airborne Battlefield C2 - TWFY13	3	2013	3	2013
Systems Development: Hardware Development: Airborne Battlefield C2 - LOE FY13	4	2013	4	2013
Systems Development: Hardware/Software Development: Core Open Arch - Develop & Integrate	1	2011	3	2011
Systems Development: Hardware/Software Development: Core Open Arch - Trainer Integration	3	2011	3	2012
Systems Development: Hardware/Software Development: Core Open Arch - ILS	4	2011	1	2012
Test & Evaluation: Technical Evaluation: Core Open Arch - Test Asset Delivery (Est.)	2	2011	2	2011
Test & Evaluation: Technical Evaluation: Core Open Arch - Test	3	2011	1	2012
Systems Development: Software Development: In Flight Refueling - Risk Reduction	1	2011	1	2011
Systems Development: Reviews: In Flight Refueling - System Readiness Review (SRR 1)	1	2011	1	2011
<i>E2C Improvements (2)</i>				
Systems Development: Hardware Development: Radar Improvement Program - Development	1	2011	4	2011
Test & Evaluation: Technical Evaluation: Radar Improvement Program - Test Assets (Est.)	2	2011	2	2011

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Exhibit R-4A, RDT&E Schedule Details: PB 2013 Navy			DATE: February 2012		
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		Start		End	
Events by Sub Project		Quarter	Year	Quarter	Year
Test & Evaluation: Technical Evaluation: Radar Improvement Program - Ground & Flight Test		2	2011	1	2012
Test & Evaluation: Technical Evaluation: Radar Improvement Program - Deploy		2	2012	2	2012
Deliveries: Radar Improvements Production Deliveries: FY12 APN (23 KIts)		2	2012	2	2012
Deliveries: Radar Improvements Production Deliveries: FY13 APN (10 KIts)		2	2013	2	2013
Deliveries: Radar Improvements Production Deliveries: FY14 APN (12 KIts)		2	2014	2	2014
Deliveries: Radar Improvements Production Deliveries: FY15 APN (11 KIts)		2	2015	2	2015
Systems Development: Software Development: Link-16/CEC Interoperability - Systems Engineering		1	2012	4	2017
Systems Development: Software Development: Link-16/CEC Interoperability - Development		1	2014	4	2017
Test & Evaluation: Technical Evaluation: Link-16/CEC Interoperability - Functional Evaluation Test		4	2015	4	2015
Test & Evaluation: Technical Evaluation: Link-16/CEC Interoperability - Performance Evaluation Test		4	2016	4	2016
Deliveries: Link 16 CEC Production Deliveries: FY16 APN (10 Kits)		2	2016	2	2016
Systems Development: Hardware/Software Development: High Frequency Internet Proto - System Integration & Test		1	2011	1	2011
Systems Development: Hardware/Software Development: High Frequency Internet Proto - Trainers		1	2011	3	2011
Systems Development: Hardware/Software Development: High Frequency Internet Proto - Deploy 2		2	2011	2	2011