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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy **DATE:** February 2011

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 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	59.304	19.011	6.696	-	6.696	1.634	1.746	7.308	24.956	Continuing	Continuing
0463: <i>E2C Improvements</i>	59.304	19.011	6.696	-	6.696	1.634	1.746	7.308	24.956	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. 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.

The Automatic Identification System (AIS) is a broadcast transponder system operating in the Very High Frequency maritime band for exchange of ship parameters including Registry, Port of Origin, Location, Course, Speed and other vessel characteristics. The current prototype E-2C AIS installation is integrated into the E-2C weapon system without a means to transfer information off board to other platforms/systems.

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.

FY2012 starts the Link-16/Cooperative Engagement Capability Interoperability Program. This provides funding 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.

UNCLASSIFIED

UNCLASSIFIED

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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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B. Program Change Summary (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	62.796	19.011	15.047	-	15.047
Current President's Budget	59.304	19.011	6.696	-	6.696
Total Adjustments	-3.492	-	-8.351	-	-8.351
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-1.700	-			
• SBIR/STTR Transfer	-1.492	-			
• Program Adjustments	-	-	-8.266	-	-8.266
• Section 219 Reprogramming	-0.299	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.085	-	-0.085
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

Change Summary Explanation

Technical: Not applicable.

Schedule: Project Unit 0463 - Schedule changes to Core Open Architecture are due to contract administration delays and the addition of Test and Integrated Logistics Support. Schedule changes to In-Flight Refueling are due to moving FY12 funding to Program Element 0604234N Advanced Hawkeye. Schedule changes to High Frequency Internet Protocol are due to the extension of Systems Integration and Test, and addition of software deployment. Schedule change is also due to the addition of the Link-16/Cooperative Engagement Capability Interoperability Program.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy **DATE:** February 2011

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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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0463: <i>E2C Improvements</i>	59.304	19.011	6.696	-	6.696	1.634	1.746	7.308	24.956	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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UNCLASSIFIED

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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>		PROJECT 0463: <i>E2C Improvements</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Airborne Battlefield Command and Control		5.205	3.564	3.507	-	3.507
		Articles: 0	0	0		0
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.						
FY 2010 Accomplishments: Funded development efforts and a Joint Expeditionary Force Exercise and a Limited Objective Experiment.						
FY 2011 Plans: Funds the continuation of development efforts and a Empire Challenge exercise and a Limited Objective Experiment.						
FY 2012 Base Plans: Funding is for development efforts and a Joint Expeditionary Force Exercise and a Limited Objective Experiment.						
Title: In Flight Refueling (IFR)		8.581	1.270	-	-	-
		Articles: 0	0			
Description: Funds the system development and testing to support the incorporation of IFR 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.						
FY 2010 Accomplishments: Funded system development efforts.						
FY 2011 Plans: Funds the continuation of system development efforts.						
Title: Universal Automatic Identification System (UAIS)		4.095	-	-	-	-

UNCLASSIFIED

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>Description: Funds development, integration, test, and fielding of new components within the E-2C radar to address obsolete Weapon Replaceable Assemblies that are expected to be unsupported 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.</p> <p>FY 2010 Accomplishments: Funded the design and development efforts.</p> <p>FY 2011 Plans: Funds the continuation of the design and development efforts and ground and flight testing.</p> <p>FY 2012 Base Plans: Funding is for the continuation of ground and flight testing and software deployment.</p>					
<p>Title: Link-16/Cooperative Engagement Capability (CEC) Interoperability</p> <p align="right">Articles:</p> <p>Description: New start program in FY12 for design, implementation, test and analysis of Link-16/CEC related interoperability issues.</p> <p>FY 2012 Base Plans: Funds the systems engineering development efforts.</p>	-	-	0.305 0	-	0.305 0
Accomplishments/Planned Programs Subtotals	59.304	19.011	6.696	-	6.696

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012 Base</u>	<u>FY 2012 OCO</u>	<u>FY 2012 Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APN/0195: <i>E-2D AHE</i>	742.061	937.803	1,072.834	163.500	1,236.334	1,308.850	1,599.492	1,398.859	1,417.059	4,605.325	17,447.774
• APN/0605: <i>Initial Spares - E-2</i>	37.775	23.618	38.712	0.000	38.712	50.178	31.355	30.239	28.591	106.090	553.655
• APN/0544: <i>E-2 Series</i>	50.284	47.046	29.215	0.000	29.215	18.175	34.965	40.010	39.848	102.479	1,606.969

D. Acquisition Strategy
The Core OA Acquisition Strategy was signed by Milestone Decision Authority (MDA), Program Executive Officer Tactical Aircraft Programs (PEO (T)) on 11 September 2008. The Milestone B decision review is planned for third quarter FY11.

UNCLASSIFIED

UNCLASSIFIED

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The IFR Acquisition Strategy was signed by the MDA, PEO(T) on 24 October 2008.		
<u>E. Performance Metrics</u> 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 UAI System. Successfully complete Design Development for the Radar Improvements program and begin ground and flight testing. Successfully complete Design Development for the Link-16/CEC Interoperability program.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy **DATE:** February 2011

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Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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 Development	SS/CPFF	Northrop Grumman Corporation:Bethpage, NY	2.146	0.152	Dec 2010	-		-		-	0.000	2.298	2.298
Primary Hardware Development4	Various	Various:Various	16.531	2.020	Nov 2010	0.752	Nov 2011	-		0.752	0.000	19.303	
Primary Hardware Development	SS/FFP	Lockheed Martin:Owego, NY	3.641	1.551	Jan 2011	-		-		-	0.000	5.192	5.192
Ancillary Hardware Development	Various	Various:Various	-	0.300	Jan 2011	0.440	Jan 2012	-		0.440	0.000	0.740	
Aircraft Integration2	Various	Various:Various	-	0.300	Nov 2010	-		-		-	0.000	0.300	
Training Development	TBD	TBD:TBD	-	-		-		-		-	5.112	5.112	5.112
Prior Yr Costs No longer funded in FYDP	Various	Various:Various	8.320	-		-		-		-	0.000	8.320	
Subtotal			30.638	4.323		1.192		-		1.192	5.112	41.265	

Remarks

Primary Hardware Development4 and Aircraft Integration2 - various contractors and award dates throughout the fiscal year.
Totals may not add due to rounding.

Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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	1.724	0.995	Dec 2010	0.346	Dec 2011	-		0.346	0.064	3.129	
Development Support	TBD	TBD:TBD	-	-		-		-		-	2.752	2.752	2.752
Software Development1	C/CPFF	Wyle Labs:Huntsville, AL	4.390	0.726	Dec 2010	-		-		-	0.000	5.116	5.116
Software Development2	Various	Various:Various	7.119	0.538	Nov 2010	-		-		-	0.000	7.657	
Software Development3	Various	Various:Various	25.248	1.814	Nov 2010	-		-		-	0.000	27.062	
Software Development4	TBD	TBD:TBD	-	-	Nov 2010	0.051	Nov 2011	-		0.051	26.753	26.804	26.804
	Various	Various:Various	8.062	1.865	Dec 2010	1.013	Dec 2011	-		1.013	0.000	10.940	

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy **DATE:** February 2011

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Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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
Engineering & Technical Services													
Government Engineering Support2	Various	Various:Various	12.563	0.903	Nov 2010	0.564	Nov 2011	-		0.564	0.405	14.435	
Government Engineering Support3	WR	Naval Air Warfare Center Aircraft Division (NAWCAD:Pax River, MD)	10.491	1.725	Nov 2010	0.975	Nov 2011	-		0.975	3.471	16.662	
Integrated Logistics Support	Various	Various:Various	1.931	0.321	Dec 2010	0.093	Dec 2011	-		0.093	0.137	2.482	
Prior Year Costs No Longer Funded in FYDP	Various	Various:Various	12.381	-		-		-		-	0.000	12.381	
Subtotal			83.909	8.887		3.042		-		3.042	33.582	129.420	

Remarks
Software Development2 and Software Development 3 - various contractors and award dates throughout the fiscal year.
Totals may not add due to rounding.

Test and Evaluation (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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	10.914	1.047	Nov 2010	0.418	Nov 2011	-		0.418	0.388	12.767	
Developmental T & E3	WR	NAWCAD:Pax River, MD	7.258	2.137	Nov 2010	0.859	Nov 2011	-		0.859	0.395	10.649	
Developmental T&E Engineering Technical Services (ETS)4	Various	Various:Various	1.567	0.386	Dec 2010	0.313	Dec 2011	-		0.313	0.000	2.266	
Developmental T & E	TBD	TBD:TBD	-	-		-		-		-	3.624	3.624	3.624
Prior Year Costs No Longer Funded in FYDP	Various	Various:Various	1.351	-		-		-		-	0.000	1.351	
Subtotal			21.090	3.570		1.590		-		1.590	4.407	30.657	

UNCLASSIFIED

UNCLASSIFIED

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Test and Evaluation (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost			

Remarks
Totals may not add due to rounding.

Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost			
Government Engineering Support	WR	NAWCAD:Pax River, MD	4.229	0.869	Nov 2010	0.407	Nov 2011	-		0.407	0.042	5.547		
Program Management Support1	Various	Various:Various	6.054	0.204	Nov 2010	0.292	Nov 2011	-		0.292	0.033	6.583		
Program Management Support-MSS2	C/CPFF	Wyle Labs:Huntsville, AL	1.929	0.088	Dec 2010	0.060	Dec 2011	-		0.060	0.000	2.077	2.077	
Program Management Support-MSS3	Various	Various:Various	4.677	0.985	Dec 2010	0.058	Dec 2011	-		0.058	0.000	5.720		
Travel	Various	Various:Various	0.703	0.085	Oct 2010	0.055	Oct 2011	-		0.055	0.150	0.993		
Prior Year Costs No Longer Funded in FYDP	Various	Various:Various	0.042	-		-		-		-	0.000	0.042		
Subtotal			17.634	2.231		0.872		-		0.872	0.225	20.962		

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 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract	
		Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost	Cost		
Project Cost Totals		153.271	19.011			6.696		-	6.696	43.326	222.304	

Remarks
Totals may not add due to rounding.

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
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UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
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UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
E2C Improvements (1)				
Systems Development: Hardware Development: Airborne Battlefield C2 - Development	1	2010	1	2014
Systems Development: Hardware Development: Airborne Battlefield C2 - Joint Expeditionary Force Exercise (JEFX) FY10	3	2010	3	2010
Systems Development: Hardware Development: Airborne Battlefield C2 - Limited Objective Experiment (LOE) FY10	4	2010	4	2010
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 - Empire Challenge FY13	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 - Design & Code	1	2010	3	2010
Systems Development: Hardware/Software Development: Core Open Arch - Develop & Integrate	4	2010	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	2010	1	2011

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Systems Development: Reviews: In Flight Refueling - System Readiness Review (SRR 1)	1	2011	1	2011
Systems Development: Hardware/Software Development: Universal Automatic Info System - System Development	1	2010	1	2010
Systems Development: Reviews: Universal Automatic Info System - Test Readiness Review	2	2010	2	2010
Test & Evaluation: Technical Evaluation: Universal Automatic Info System - Deploy	2	2011	2	2011
Test & Evaluation: Technical Evaluation: Universal Automatic Info System - Developmental Testing	2	2010	1	2011
Deliveries: UAIS Production Deliveries FY11: APN (15) Kits	3	2011	3	2011
Deliveries: UAIS Production Deliveries FY12: APN (15) Kits	3	2012	3	2012
Deliveries: UAIS Production Deliveries FY13: APN (15) Kits	3	2013	3	2013
Deliveries: UAIS Production Deliveries FY14: APN (15) Kits	3	2014	3	2014
Deliveries: UAIS Production Deliveries FY15: APN (13) Kits	3	2015	3	2015
E2C Improvements (2)				
Systems Development: Hardware Development: Radar Improvement Program - Development	2	2010	4	2011
Systems Development: Reviews: Radar Improvement Program System Requirements Review	4	2010	4	2010
Test & Evaluation: Technical Evaluation: Radar Improvement Program - Test Assets (Est.)	2	2011	2	2011
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 KIIts)	2	2012	2	2012
Deliveries: Radar Improvements Production Deliveries: FY13 APN (10 KIIts)	2	2013	2	2013

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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
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>

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
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	2016
Systems Development: Software Development: Link-16/CEC Interoperability - Development	1	2014	3	2016
Test & Evaluation: Technical Evaluation: Link-16/CEC Interoperability - Functional Evaluation Test	3	2016	3	2016
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	2010	1	2011
Systems Development: Hardware/Software Development: High Frequency Internet Proto - Deploy	3	2010	3	2010
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

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