

## EXHIBIT R-2, RDT&amp;E Budget Item Justification

DATE:

February 2006

## APPROPRIATION/BUDGET ACTIVITY

RESEARCH DEVELOPMENT TEST &amp; EVALUATION, NAVY /

BA 7

## R-1 ITEM NOMENCLATURE

0204152N, E-2 SQUADRONS

COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Total PE Cost	18.255	17.022	1.540	1.577	1.592	1.618	1.658	
0463 E-2C IMPROVEMENTS	5.908	2.222	1.540	1.577	1.592	1.618	1.658	
9999 CONGRESSIONAL ADDS	*12.347	**14.800						

## (U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

E-2 Improvements provide for product improvements and incorporation of innovative technologies for the evolution of E-2 Battle Management and Command and Control (BMC2) capabilities in support of naval warfare command and control requirements. It has previously funded developments for the modification or replacement of selected weapon replaceable assemblies of current installed subsystems. For example, the program developed a Mission Computer Upgrade (MCU), applying on-going developments in data processing and target detection, which will relieve current bottlenecks in signal and data processing. It has also provided for experimentation with wideband internet protocol (IP) concepts, to include technologies such as High Frequency IP Router Network (HF SIPRNET), VRC-99 digital IP radio as a surrogate to the Joint Tactical Radio System, machine-to-machine digital data communications, airborne Advanced Digital Networking System, and open architected hardware and software computing environments. These efforts have laid the foundation for growth to provide additional functional capabilities to satisfy evolving operational requirements, e.g., Battle Space Networking, Cooperative Engagement Capability (CEC), Satellite Communications (SATCOMS), and permits the evolutionary growth of a Combat Identification and Theater Air and Missile Defense (TAMD) Capability.

FY2005-2011: Funding provides for evaluation and demonstration of technology for new emergent systems and subsystems. This initiative allows for data collection and the evaluation of new technologies in the context of emerging missions and requirements including Theater Air and Missile Defense, Ballistic Missile Defense, littoral warfare, combat identification including specific emitter identification, multi-source integration, Airborne Battlefield Command and Control (ABC2) and Single Integrated Air Picture (SIAP) as well as parts and system obsolescence. Emphasis will be upon the following areas: participation in exercises to assess capabilities against emerging threats; identify deficiencies, identification of candidate solutions; and ground/airborne demonstrations of the identified technologies.

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APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME	
RDT&E, N /		BA 7					0204152N, E-2 SQUADRONS	
							0463, E-2C IMPROVEMENTS	
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0463 E-2C IMPROVEMENTS		5.908	2.222	1.540	1.577	1.592	1.618	1.658
RDT&E Articles Qty								

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APPROPRIATION/BUDGET ACTIVITY

**RDT&E, N /****BA 7**

PROGRAM ELEMENT NUMBER AND NAME

**0204152N, E-2 SQUADRONS**

PROJECT NUMBER AND NAME

0463, E-2C IMPROVEMENTS

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	1.229			
RDT&E Articles Qty				

## Air Operations Decision Support (AODS)

Developed software applications to automate the Air Tasking Order (ATO) and Airspace Control Order (ACO) to allow effective Command and Control of the Battlespace in cooperation with Office of Naval Research Knowledge Superiority Assurance Future Naval Capabilities. Conducted full data base development in FY 2005 to allow automated track Identification, and fusion of ATO/ACO information and conduct hardware/software development of automated update technologies for ATO, ACO, Special Instructions, Rules of Engagement, and all database information.

	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	3.561	1.119	.761	
RDT&E Articles Qty				

## Fund Airborne Battlefield Command and Control (ABC2)

Conducted demonstration of High Frequency Secret Internet Protocol Router Network (HF SIPRNet) capability and VRC-99 Joint Tactical Radio System Wideband Networking Waveform Prototype waveforms, TALISMAN SABER and DARPA TTNT experiment. Developed E-2 RAIDER for Digital Communications Suite capability to FA-18 strike aircraft. Funding will be used to conduct demonstrations on E-2 airborne Network Centric Collaborative Targeting (NCCT) capability, IP networking concepts (including Advanced Digital Networking Systems, Tactical Information Services, IP enabled communications systems (such as HF SIPRNET, VRC-99 and TTNT), machine-to-machine interface, open architected computing environment, network applications), and airborne demonstration of advanced mission computer and communications technologies. Participate in the fleet experiments such as TRIDENT WARRIOR and Joint Task Force Exercise.

	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	.184	.200	.200	
RDT&E Articles Qty				

## Single Integrated Air Picture (SIAP) Block 0

Successfully completed Preliminary Design Review/Critical Design Review and coding of SIAP Block 0 software for implementation and fielding in Systems Configuration Set (SCS)-05. Outyear funding will support testing and fielding of SIAP Block 0 software.

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PROJECT NUMBER AND NAME

0463, E-2C IMPROVEMENTS

	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	.934	.903	.579	
RDT&E Articles Qty				

## Multi-Source Integration (MSI) Phase II

Developed software applications to facilitate incorporation of new technologies such as MSI in existing E-2 Operational Flight Program (OFP). Produced hardware-in-the-loop data sets, performance measures, and data analysis tools in support of MSI Ph II. Fund software architecture analysis and design for incorporation of diverse applications in the E-2 Weapon System, including MSI, Combat ID, and Distributed Weapons Coordination. Fund all-source data fusion in the E-2 including radar, Identification Friend or Foe (IFF), Electronic Surveillance (ES), Link 16, Link 11, and Cooperative Engagement Capability (CEC). Fund requirements analysis for development of integrated communication system architecture to support advanced sensor networking. Fund Fleet Battle Group interoperability testing and evaluation for the E-2.

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## APPROPRIATION/BUDGET ACTIVITY

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## PROGRAM ELEMENT NUMBER AND NAME

0204152N, E-2 SQUADRONS

## PROJECT NUMBER AND NAME

0463, E-2C IMPROVEMENTS

## C. PROGRAM CHANGE SUMMARY

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget:	6.000	2.256	1.540
Current President's Budget:	5.908	2.222	1.540
Total Adjustments	-0.092	-0.034	0.000

## Summary of Adjustments

Congressional Reductions			
Congressional Rescissions			
Congressional Undistributed Reductions	-0.047	-0.024	
Congressional Increases	0.001		
Economic Assumptions		-0.010	0.008
Miscellaneous Adjustments	-0.046		-0.008
Subtotal	-0.092	-0.034	0.000

## Schedule:

Schedule changes are due to resolution of Software Trouble Reports (STRs) in Software Systems Configuration Set 05 (SCS05).

## Technical:

Not Applicable.

## D. OTHER PROGRAM FUNDING SUMMARY:

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
APN-1/E-2C (LI# 14 & 15)	246.755	245.857	203.572						696.184
APN-5/E-2C (LI# 37)	15.548	13.484	9.087	9.051	8.278	8.467	8.681	54.650	127.246
APN-6/E-2C (LI# 55)	6.530	0.446	0.515						7.491

APN-1/APN-6 funding after FY07 is related to P.E. 0604234N, P.U. 3051, E-2 Advanced Hawkeye.

## E. ACQUISITION STRATEGY:

Not Applicable.

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Exhibit R-3 Cost Analysis (page 1)								DATE:		February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /		PROGRAM ELEMENT 0204152N, E-2 SQUADRONS				PROJECT NUMBER AND NAME 0463, E-2C IMPROVEMENTS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Primary Hdw Development	VARIOUS	VARIOUS	8.532	.040	VARIOUS						8.572	
Primary Hdw Development - ABC2	VARIOUS	VARIOUS	.200	.734	VARIOUS	.682	VARIOUS	.361	VARIOUS		1.977	
Primary Hdw Development - MSI	VARIOUS	VARIOUS	1.467	.030	11/04						1.497	
Primary Hdw Development - SIAP	VARIOUS	VARIOUS		.090	04/05						.090	
SUBTOTAL PRODUCT DEVELOPMEN			10.199	.894		.682		.361			12.136	
Remarks:												
SUPPORT												
Development Support	WX	NAWCWD, CHINA LAKE CA		.284	10/04						.284	
Government Engineering	VARIOUS	NAWCAD, PATUXENT RIVER MD	75.228	.661	10/04	.350	11/05	.200	11/06	Continuing	Continuing	
Government Engineering Support - SIAP	VARIOUS	TBD				.200	01/06	.200	01/07	Continuing	Continuing	
Government Engineering Support - VAR	WX	NAWCAD, PATUXENT RIVER MD	.300	.242	10/04						.542	
SUBTOTAL SUPPORT			75.528	1.187		.550		.400		Continuing	Continuing	
Remarks:												
TEST & EVALUATION												
Dev Test & Eval - ABC2 (Non-FFRDC)	VARIOUS	TBD				.319	11/05				.319	
Dev Test & Eval - AODS (Non-FFRDC)	WX	NAWCAD, PATUXENT RIVER MD		.626	10/04						.626	
Dev Test & Eval - MSI (Non-FFRDC)	VARIOUS	TBD						.180	02/07	Continuing	Continuing	
Dev Test & Eval - VARIOUS	WX	COM OFF COMLANTFLT, NORFOLK VA		.043	11/04						.043	
Dev Test & Eval - VARIOUS	WX	NAWCAD, PATUXENT RIVER MD		2.278	11/04	.341	11/05	.049	11/06	Continuing	Continuing	
SUBTOTAL TEST & EVALUATION				2.947		.660		.229		Continuing	Continuing	
Remarks:												
MANAGEMENT												
Program Management Support	WX	NAWCAD, PATUXENT RIVER MD	1.921	.562	11/04	.293	11/05	.500	11/06	Continuing	Continuing	
Program Management Support (Non-FFRDC)	SS-CPFF	ADVANCED INFORMATION ENGINEERING S		.300	11/04						.300	.300
Travel	VARIOUS	NAVAIR, PAXTUXENT RIVER MD	.184	.018	11/04	.037	11/05	.050	11/06	Continuing	Continuing	
SUBTOTAL MANAGEMENT			2.105	.880		.330		.550		Continuing	Continuing	
Remarks:												
Total Cost			87.832	5.908		2.222		1.540		Continuing	Continuing	
Remarks:												

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## CLASSIFICATION:

EXHIBIT R4, Schedule Profile																											DATE:									
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME												
RDT&E, N / BA-7												0204152N, E-2 SQUADRONS												0463, E-2C IMPROVEMENTS												
Fiscal Year	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Acquisition Milestones																																				
MSI PH I																																				
AODS																																				
ABC2																																				
MSI PH II																																				
SIAP Blk 0																																				
Production Milestones																																				

## R-1 Shopping List Item No 171

**Exhibit R-2 RDTEN Budget Item Justification**  
(Exhibit R-2, Page 8 of 13)

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EXHIBIT R-2a, RDT&E Project Justification								DATE:			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME				
RDT&E, N /		BA 7					0204152N, E-2 SQUADRONS				
							9999, CONGRESSIONAL ADDS				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011			
9999 CONGRESSIONAL ADDS		*12.347	**14.800								
RDT&E Articles Qty		Not Applicable									
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>CONGRESSIONAL ADDS.</p> <p>*The FY 2005 budget reflects the following Congressional adds: \$2.1M for E-2C Program Support Activity (PSA)/E-2C Hawkeye Propeller Safety and Reliability which has been revised by \$.022 for Congressional Undistributed Adjustments, \$.019 for Small Business Innovation Research (SBIR), and \$.002 for Department of Energy for a final amount of \$2.057M; \$1.7M for Non-Cooperative Combat Identification Capability which has been revised by \$.016 for Congressional Undistributed Adjustments, \$.038 for SBIR, and .001 for Department of Energy for a final amount of \$1.645M; \$5.1M for PMRF Net-Centric Test Bed/Advanced Hawkeye (AHE) Testing which has been revised by \$.046 for Congressional Undistributed Adjustments, \$.116 for SBIR, and \$.004 Department of Energy for a final amount of \$4.934M; \$2.8M for Airborne Data Terminal Set which has been revised by \$.027 for Congressional Undistributed Adjustments, \$.049 for SBIR, and \$.002 for Department of Energy for a final amount of \$2.722M; and \$1.0M for Magneto Rheological Shock Engine Mount which has been revised by \$.010 for Congressional Undistributed Adjustments, and \$.001 for Department of Energy for a final amount of \$.989M.</p> <p>**The FY 2006 budget reflects the following Congressional adds: \$2.1M for E-2C Program Support Activity (PSA); \$1.3M for Non-Cooperative Combat Identification Capability; \$3.4M for PMRF Net-Centric Test Bed/Advanced Hawkeye (AHE) Testing; \$1.0M for Magneto Rheological Shock Engine Mount; \$2.6M for Airborne Advance Network; \$1.0M for Global Information Grid Middleware Portal; \$3.4M for Pacific Missile Range Facility Makaha Ridge FORCENet Lab.</p>											

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**RDT&E, N /**

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PROGRAM ELEMENT NUMBER AND NAME

**0204152N, E-2 SQUADRONS**

PROJECT NUMBER AND NAME

9999, CONGRESSIONAL ADDS

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	2.057	2.100		
RDT&E Articles Qty				

9418-E2C Program Support Activity-SBIR Phase III

Congressional Add for E-2C Program Support Activity.  
Supported development and testing of Model Driven Software architecture and Publish/Subscribe Middleware for E-2 Hawkeye mission computer.

	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	1.645	1.300		
RDT&E Articles Qty				

9419-Non-Cooperative Combat Identification Capability

Congressional Add for E-2C Program Support Activity.  
Supported concept development, system engineering, and system prototyping for an advanced non-cooperative identification system capability.

	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	4.934	3.400		
RDT&E Articles Qty				

9420- PMRF Net-Centric Test Bed/Adv Hawkeye Testing

Congressional Add for PMRF Net-Centric Test Bed/Advanced Hawkeye Testing.  
Supported science and technology and advanced technology demonstration initiatives for potential transition to the E-2C Hawkeye program.

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EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N /</b>		PROGRAM ELEMENT NUMBER AND NAME <b>BA 7 0204152N, E-2 SQUADRONS</b>		PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS
	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	2.722			
RDT&E Articles Qty				
9615-Airborne Data Terminal Set (DTS)				
Congressional Add for Airborne Data Terminal Set (DTS). Enhanced the Advanced Hawkeye data communications capability.				
	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	.989	1.000		
RDT&E Articles Qty				
9616-Magneto Rheological Shock Engine Mount				
Congressional Add for Magneto Rheological (MR) Shock Engine Mount. Fund research, develop and test an airworthy MR shock mount for the E-2C aircraft.				

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PROJECT NUMBER AND NAME

9999, CONGRESSIONAL ADDS

	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost		2.600		
RDT&E Articles Qty				

9744-Airborne Advanced Network

Congressional Add for Airborne Advanced Network.

Develop air-to-air kill chain networking techniques and applications to improve interoperability and level of service.

	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost		1.000		
RDT&E Articles Qty				

9745-Global Information Grid

Congressional Add for Global Information Grid Middleware Portal.

Development of a services oriented Architecture to provide network centric enterprise services.

	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost		3.400		
RDT&E Articles Qty				

9746-Pacific Missile Range Facility Pearl Harbor

Congressional Add for Pacific Missile Range Facility Makaha Ridge FORCENet Lab.

Fund Cooperative Engagement Capability (CEC) like capability for Makaha Ridge to connect to Pearl Harbor CEC network.

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PROGRAM ELEMENT NUMBER AND NAME

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PROJECT NUMBER AND NAME

9999, CONGRESSIONAL ADDS

## C. PROGRAM CHANGE SUMMARY

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget:	12.576	0.000	0.000
Current President's Budget:	12.347	14.800	0.000
Total Adjustments	-0.229	14.800	0.000

## Summary of Adjustments

Congressional Reductions

Congressional Rescissions

Congressional Undistributed Reductions

-0.232

Congressional Increases

0.003

14.800

Economic Assumptions

Miscellaneous Adjustments

Subtotal

-0.229

14.800

0.000

Schedule:

Not Applicable.

Technical:

Not Applicable.

## D. OTHER PROGRAM FUNDING SUMMARY:

FY 2005

FY 2006

FY 2007

FY 2008

FY 2009

FY 2010

FY 2011

To Complete

Total Cost

Not Applicable

## E. ACQUISITION STRATEGY:

Not Applicable.

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