#### CLASSIFICATION:

### **UNCLASSIFIED**

EXHIBIT R-2, RDT&E Budget Item Justification							DATE:	
-							Februa	ry 2005
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMEN			
RESEARCH DEVELOPMENT TEST & EVALUATI	ON, NAVY /	BA-5	ı		0604234N, E-2 Ad	lvanced Hawkeye		
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	328.121	590.592	629.682	558.415	748.607	333.859	158.551	99.982
3051 E-2 Advanced Hawkeye	328.121	590.592	629.682	558.415	748.607	333.859	158.551	99.982
Total PE Cost	328.121	590.592	629.682	558.415	748.607	333.859	158.551	FY 20

#### A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Advanced Hawkeye (AHE) program develops, demonstrates, tests, and procures the replacement of the AN/APS-145 radar system and other aircraft system components that modernize the E-2C weapon system to maintain open ocean mission capability while providing the United States Navy (USN) with an effective littoral surveillance and Theater Air and Missile Defense (TAMD) capability. Key radar technologies are Space-Time Adaptive Processing (STAP), Electronically Scanning Array (ESA), solid state transmitter, high dynamic range digital receivers and Identification Friend or Foe (IFF)/radar aperture integration. The resultant detection system will provide a substantially improved overland performance by correcting current sensor shortfalls and enhancing all current required mission areas, while simultaneously contributing to the emerging TAMD mission requirements.

This P.E. was utilized for AHE (Radar Moderniztion Program (RMP)) pre-System Development and Demonstration (Pre-SD&D) in FY 2003, followed by SD&D beginning in 4th quarter FY 2003. The program ramps up in FY 2004 and FY 2005 to support a Preliminary Design Review (PDR) in 1st Qtr FY 2005 and a Critical Design Review (CDR) in 1st Qtr FY 2006. The program continues growth in FY 2005 to FY 2006 to support Critical Design Review (CDR) and SDD production. The program plan begins E-2 AHE Pilot Production in FY 2007 (long lead on four aircraft), the production phase with a Low-Rate Initial Production (LRIP) Milestone C decision in FY 2009, and achieves Initial Operational Capability (IOC) in FY 2011.

R-1 SHOPPING LIST - Item No.

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**UNCLASSIFIED** 

Exhibit R-2, RDTEN Budget Item Justification (Exhibit R-2, page 1 of 12)

#### CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:	
							Februa	ry 2005
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEM	ENT NUMBER AND	NAME		PROJECT NUMBE	R AND NAME		-
RDT&E, N / BA-5	0604234N, E-2 Ad	0604234N, E-2 Advanced Hawkeye 3051, E-2 Advanced Hawkeye						
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	328.121	590.592	629.682	558.415	748.607	333.859	158.551	99.98
RDT&E Articles Qty				2*	4			

#### A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Advanced Hawkeye (AHE) will replace the existing E-2C fleet. The AHE program develops, demonstrates, tests, and procures the replacement of the AN/APS-145 radar system and other aircraft system components that modernize the E-2C weapon system to maintain open ocean mission capability while providing the United States Navy (USN) with an effective littoral surveillance and Theater Air and Missile Defense (TAMD) capability. Key radar technologies are Space-Time Adaptive Processing (STAP), Electronically Scanning Array (ESA), solid state transmitter, high dynamic range digital receivers and Identification Friend or Foe (IFF)/radar aperture integration. The resultant detection system will provide a substantially improved overland performance by correcting current sensor shortfalls and enhancing all current required mission areas, while simultaneously contributing to the emerging TAMD mission requirements.

The AHE program also upgrades or replaces aircraft system components that are either obsolete or becoming unsupportable, upgrades or replaces other aircraft systems as required to support the radar upgrade, and improves the producibility of the weapons system. The impact of the dominant battlefield awareness provided by this improved airborne early warning system will substantially contribute to the development of a single integrated air picture.

This P.E. was utilized for AHE (Radar Moderniztion Program (RMP)) pre-System Development and Demonstration (Pre-SD&D) in FY 2003, followed by SD&D beginning in 4th quarter FY 2003. The program ramps up in FY 2004 and FY 2005 to support a Preliminary Design Review (PDR) in 1st Qtr FY 2005 and a Critical Design Review (CDR) in 1st Qtr FY 2006. The program continues growth in FY 2005 to FY 2006 to support Critical Design Review (CDR) and SDD production. The program plan begins E-2 AHE Pilot Production in FY 2007 (long lead on four aircraft), the production phase with a Low-Rate Initial Production (LRIP) Milestone C decision in FY 2009, and achieves Initial Operational Capability (IOC) in FY 2011.

\*Two Multi-Year Procurement E-2C aircraft will be modified to provide RDT&E assets for the AHE program.

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#### CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE:
			February 2005
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND N	IAME
RDT&E, N / BA-5	0604234N, E-2 Advanced Hawkeye	3051, E-2 Advanced Hawkey	ye

#### **B. Accomplishments/Planned Program**

	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	287.776	562.949	590.618	399.871
RDT&E Articles Quantity				2

#### System Development and Demonstration (SD&D)

Awarded SD&D Contract with Northrop Grumman Corporation. Entered into SD&D for E-2 AHE program; conducted engineering and development efforts in preparation for Preliminary Design Review for the AHE weapons system. Continue SD&D effort. Conduct engineering and development efforts in preparation for Critical Design Reviews.

	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		4.109	1.186	1.207
RDT&E Articles Quantity				

Fund Government Furnished Equipment

	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	33.395	23.534	28.068	49.427
RDT&E Articles Quantity				

#### NAWCAD Support

Fund Government Engineering and Contractor Engineering Support. Perform Government oversight. Perform engineering and loads analysis, design, preparation, installation and ground test calibration of instrumentation and for A-123 Loads Test. Execute test program risk reduction efforts. Fund ramp up for the Software Functional Review/Preliminary Design Review/Critical Design Review. Development and creation of the wind tunnel test model and preparation for the wind tunnel testing to include the rehost of the simulation data, and design and develop a digital engine control system for obsolescence, weight reduction, and performance improvements.

R-1 SHOPPING LIST - Item No.

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Exhibit R-2, RDTEN Budget Item Justification (Exhibit R-2, page 3 of 12)

#### **CLASSIFICATION:**

RAM ELEMENT NUM 4N, E-2 Advanced Ha FY 04 6.950		PROJECT NUMBER AND N 3051, E-2 Advanced Hawkey		JUS
4N, E-2 Advanced Ha	awkeye	3051, E-2 Advanced Hawkey	ye	
FY 04				
	FY 05	FY 06	FY 07	
	FY 05	FY 06	FY 07	
6.950				
			1	
enorts. Tunded Glass	sined Development end	is. I dilued NO-13011 ATIL Advar	nced Development Model (ADM) syst	em mgm test
FY 04	FY 05	FY 06	FY 07	
1104	1 1 00			
		0.0.0	101.010	
FY 04	FY 05	FY 06	FY 07	
		ainers (OFT) and Simulated Maintenance Tra	ainers (OFT) and Simulated Maintenance Trainers (SMT).	ainers (OFT) and Simulated Maintenance Trainers (SMT).

R-1 SHOPPING LIST - Item No.

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Exhibit R-2, RDTEN Budget Item Justification (Exhibit R-2, page 4 of 12)

#### **CLASSIFICATION:**

EXHIBIT R-2a, RDT&E Project Justification					DATE:
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER A	VND NVME		PROJECT NUMBER AND	February 2005
RDT&E, N / BA-5	0604234N, E-2 Advanced Hawkey	e		3051, E-2 Advanced Haw	vkeye
C. PROGRAM CHANGE SUMMARY:					
Funding:	FY 2004	FY 2005	FY 2006	FY 2007	
Previous President's Budget:	343.306	597.015	609.197	526.927	
Current BES/President's Budget	328.121	590.592	629.682	558.415	
Total Adjustments	-15.185	-6.423	20.485	31.488	
Summary of Adjustments Congressional program reductions Congressional undistributed reductions Congressional rescissions SBIR/STTR Transfer Other Adjustments Economic Assumptions Reprogrammings Congressional increases Subtotal	-8.117 -0.319 -6.749 -15.185	-5.669 -0.754 -6.423	12.751 7.734 20.485	22.839 8.649 31.488	
Schedule: Not Applicable.					
Technical: Technical approach was approved in A	acquisition Strategy on 21 March 200	03.			

#### CLASSIFICATION:

EXHIBIT R-2a, RDT&E Proj	ect Justification		D	ATE:
				February 2005
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAM	ME
RDT&E, N /	BA-5	0604234N, E-2 Advanced Hawkeye	3051, E-2 Advanced Hawkeye	
RDT&E, N /	BA-5	0604234N, E-2 Advanced Hawkeye	3051, E-2 Advanced Hawkeye	

#### D. OTHER PROGRAM FUNDING SUMMARY:

									То	Total
Line Item No. & Name	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Complete	Cost
APN-1/E-2C (LI# 14 & 15)					76.072	711.284	769.171	787.332	9348.760	11692.619
APN-6/E-2C (LI# 57)						21.159	11.809	18.971	136.555	188.494

APN Funding prior to FY08 is related to P.E. 0204152N, P.U. 0463, E-2C Improvements.

#### Related RDT&E

(U) 0603658N (Ship Self Defense, CEC)

#### E. ACQUISITION STRATEGY:

Acquisition Strategy was signed by the MDA, USD (AT&L) on 21 March 2003. Milestone B approval to proceed with System Development and Demonstration was given 6 June 2003 by the Defense Acquisition Board (DAB).

#### CLASSIFICATION:

									DATE:				
Exhibit R-3 Cost Analysis (page	e 1)								February 200	)5			
APPROPRIATION/BUDGET ACTIVIT	TY		PROGRAM E	LEMENT			PROJECT NU			-			
RDT&E, N / BA-5			0604234N, E-	2 Advanced Ha	wkeye		3051, E-2 Advanced Hawkeye						
	Method	Performing Activity & Location	•	-	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Dev (Pre-SD&D)	SS/CPFF	CLASSIFIED		15.694								15.694	15.694
Ancillary Hardware Development													
Aircraft Integration													
Ship Integration													
Ship Suitability													
Systems Engineering (Pre-SD&D)	SS/CPFF	NGC, NY		120.043								120.043	120.043
Trainer Development/Trainer	TBD	TBD					9.810	02/06	107.910	02/07	126.295	244.015	244.015
Licenses													
Tooling													
GFE	SS/CPFF	VARIOUS			4.109	10/04	1.186	10/05	1.207	10/06	0.428	6.930	6.930
Primary Hardware Dev (SD&D)	SS/CPAF	NGC, NY		302.440	549.625	10/04	561.726	10/05	381.026	10/06	950.349	2,745.166	2,745.166
Contractor Engineering Support	CPFF	TBD		0.671								0.671	0.67
Primary Hardware Dev - Engines	SS/CPFF	TBD		2.019								2.019	2.019
Award Fees	SS/CPFF	TBD		8.589	11.140	10/04	28.892	10/05	18.845	10/06	70.878	138.344	138.34
			<u> </u>										
Subtotal Product Development				449.456	564.874		601.614	ı	508.988		1,147.950	3,272.882	

Remarks:

Successful DAB to enter SD&D completed 6 June 03, ADM and APBA approved 13 June 03.

#### CLASSIFICATION:

								DATE:				
Exhibit R-3 Cost Analysis (p.	age 1)									February 20	05	
APPROPRIATION/BUDGET ACT	IVITY	PROGRAM	ELEMENT			PROJECT N	JMBER AND N	IAME				
RDT&E, N / BA-5		0604234N, E	E-2 Advanced F	lawkeye		3051, E-2 Ad	vanced Hawke	ye				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Support-ETS	WX/RX	NAWCAD, Pax River MD	0.21	4							0.214	ł
Development Support	WX/RX	Classified	8.09	0							8.090	)
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Government Engineering Support	WX	NAWCAD, Pax River, MD	2.28	5 18.955	11/04	14.189	11/05	23.362	11/0	6 98.909	157.700	)
Government Engineering Support	Various	Various	0.52	4							0.524	ţ
Subtotal Support			11.11	3 18.955	5	14.189	9	23.362	2	98.909	166.528	3
Remarks:												

#### **CLASSIFICATION:**

								DATE:									
Exhibit R-3 Cost Analysis (pag	ie 2)									February 200	05						
APPROPRIATION/BUDGET ACTIV	İTY	PROGRAM E	LEMENT		PROJECT N	PROJECT NUMBER AND NAME											
RDT&E, N / BA-5		0604234N, E	-2 Advanced F	lawkeye		3051, E-2 Ad	3051, E-2 Advanced Hawkeye										
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date		FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract					
Developmental Test & Evaluation	WR/WX	NAWCAD, Pax River MD	8.46	3 3.	82 11/0	4 5.737	11/05	12.574	11/06	98.809	128.765						
Developmental T&E	Various	Various	0.35	7							0.357						
Developmental T&E	MIPR	Edwards AFB, CA	2.11	2							2.112						
GFE		·															
Award Fees																	
Subtotal T&E			10.93	2 3.	182	5.737	,	12.574		98.809	131.234						
Contractor Engineering Support	Various	Various	3.46	8							3.468						
Government Engineering Support	Various	Various	25.52	6							25.526						
Program Management Support	WX/RX	NAWCAD, Pax River, MD	6.42	3 3.	11/04	7.816	11/05	12.951	11/06	50.704	81.332						
Travel	WX/RX	NAWCAD, Pax River, MD	0.51	4 0.	143 11/04	4 0.326	11/05	0.540	11/06	2.113	3.636						
Management Support		Classified	1.78	5							1.785						
											445.747						
Subtotal Management	1		37.71	6 3.	581	8.142	2	13.491		52.817	115.747						
Remarks:																	
Total Cost			509.21	7 590.	592	629.682	2	558.415		1,398.485	3,686.391						
Remarks:																	

#### **CLASSIFICATION:**

EXHIBIT R4, Schedul	e Profile																									DATE	E:						
<u> </u>																												F	ebru	ary 2	005		
APPROPRIATION/BUDG																MAN C	E						JECT N										
RDT&E, N /	BA-	<u>,                                     </u>			1			0604234N, E-2 Advanced Hawkeye 3051, E-2 Advanced Hawkeye										икеуе				1											
Fiscal Year		20	004			2005				2006			2007			2008			2009			2010				2011							
	1	2	3	4	1	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																							MS C									loc	
AHE System Development	SFR			PD	R				CDR	?																							
SDD AHE Systems Installation																Tv	ro Unit	s															
Test & Evaluation Milestones															Ļ														DT/D	T Assis	st - Pilo	t Proc	luction
								DT	DT A	ssist					$\square$			1	1	1	,	J D	T/DT A	ssist	1	1							
Development Test* Operational Test																					peration ssessm											OT Re Reviev	adines
Production Milestones																							LRIP I				LRIP I CA				LRIP I	II	
Deliveries																											4	a/c PP	Delive	ery			

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<sup>\*</sup> DT/DT Assist in FY05/FY06 and 1Q-2Q of FY07 includes NC-130/A-123/lab integration dedicated for weapon system development and air vehicle testing.

<sup>\*</sup> DT/DT Assist in FY07-FY09 includes efforts for weapon system development and air vehicle testing on SD&D #1 and SD&D #2 aircraft.

#### **CLASSIFICATION:**

Exhibit R-4a, Schedule Detail						DATE:	Eebruary 20	ns			
APPROPRIATION/BUDGET ACTIVITY	February 2005  MBER AND NAME										
	PROGRAM EI										
RDT&E, N / BA-5		2 Advanced Ha		1	-	anced Hawkey		T			
Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011			
Acquisition Milestones - Milestone C											
AHE System Development - Software Functional Review (SFR)	1Q										
AHE System Development - Preliminary Design Review (PDR)		1Q									
AHE System Development - Critical Design Review (CDR)			1Q								
SDD AHE Systems Installation				4Q							
Test & Evaluation Milestones - Development Test - A-123 & NC-130		1Q-4Q	1Q-4Q	1Q-2Q							
Test & Evaluation Milestones - Development Test - SD&D #1 & 2				3Q-4Q							
Test & Evaluation Milestones - Operational Assessment											
Production Milestones - LRIP I Contract Award											
DT/DT Assist - Pilot Production											
Production Milestones - LRIP II Contract Award											
Production Milestones - LRIP III Contract Award											
Initial Operational Capabilities (IOC)											
Operational Test - Readiness Review											
Pilot Production Delivery (4 A/C)											
<u> </u>											

R-1 SHOPPING LIST - Item No.

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Exhibit R-2, RDTEN Budget Item Justification (Exhibit R-2, page 11 of 12)

Termination Liability Funding
For Major Defense Acquistion Programs,
RDT&E Funding
(\$000)

Program	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0604234N, E-2								
Advanced								
Hawkeye	0	0	0	0	0	0	0	0

**UNCLASSIFIED** 

This program does not budget/fund termination liability separately. A Limitation of Funds (LoF) clause (FAR 52.232-22) is inserted in all incrementally funded R&D contracts. This clause is designed to limit the government's legal liability to the amount obligated.