

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification

DATE:

February 2003

APPROPRIATION/BUDGET ACTIVITY

RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5

R-1 ITEM NOMENCLATURE

SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N

COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	33.075	29.367	23.076	31.032	8.962	8.255	8.345	8.492
20173 / NATO SEASPARROW	28.530	8.585	18.043	21.482	5.731	4.966	5.039	5.128
20167 / 5" Rolling Airframe Missile	4.545	10.513	5.033	9.550	3.231	3.289	3.306	3.364
29081 / PHALANX CIWS SEARAM	0.000	10.269	0.000	0.000	0.000	0.000	0.000	0.000

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This program element provides funding for the development of systems that fulfill a portion of the third phase of the ship self defense: Engage. Development in this line will focus on hard kill capabilities in which missiles are used to intercept incoming ASCMs.

(U) ENGAGEMENT: Missile and system improvements necessary to meet their requirements are being addressed via NATO SEASPARROW Missile System (NSSMS) (20173) and 5" Rolling Airframe Missile (RAM) (20167). Missile improvements are to include improved kinematic performance plus advanced seeker and low elevation fuzing/warhead capability improvements.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N				PROJECT NUMBER AND NAME NATO SEASPARROW/20173			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	28.530	8.585	18.043	21.482	5.731	4.966	5.039	5.128
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project encompasses two (2) primary efforts to enhance ship self defense:

1. (U) EVOLVED SEASPARROW MISSILE (ESSM): A cooperative effort among 10 NATO SEASPARROW Nations, including the U.S., to improve the capability of the SEASPARROW Missile to counter the low altitude, highly maneuverable Anti-Ship Cruise Missile threat. The program consists of evolving the SEASPARROW Missile through the development of a new rocket motor with tail control; thrust vector control and ordnance (warhead) upgrade; modifications to the MK 41 VLS to fire from a single cell with 4 ESSM (QuadPack); and modifications to the NATO SEASPARROW Missile System (NSSMS) to provide ESSM capability. FY03 introduces the development of the ESSM launching system. The Launching system (LS) will provide the CV/ CVN/ LHD class ships with an affordable light weight means of employing ESSM. The ESSM LS will replace the Navy's aging MK 29 GMLS by leveraging existing technology and canister launcher Production Programs under contract for other Countries / Ship's Commercial off the shelf. (COTS/NDI) electronics.

2. (U) NATO SEASPARROW - MK 91 Rearchitecture/SDSMS: The MK 91 Rearchitecture Program integrates NSSMS into the Ship Self Defense System (SSDS) Architecture to provide ship missile defense utilizing an open architected system. This effort consists of combining the Firing Officer Console and Radar Set Console functionality into a single Advanced Display System Console (AN/UYQ 70); modifying the Signal Data Processor and eliminating the MK 157 Computer Signal Data Converter and System Evaluation and Trainer, and redistributing this functionality within SSDS compatible microprocessors. This approach will eliminate the analog, point-to-point architecture, limited input-output channel and computer processing reserve deficiencies resident in the existing MK 57 NSSMS, and is required for ESSM. This modification also allows for full exploitation of the capabilities of the future ESSM and provides significant reductions (over 50%) in NSSMS cost of ownership and manning requirements.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / 5	PROGRAM ELEMENT NUMBER AND NAME SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N	PROJECT NUMBER AND NAME NATO SEASPARROW/20173																	
B. Accomplishments/Planned Program																			
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RDT&E Articles Quantity																			

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 3 of 26)

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / 5	PROGRAM ELEMENT NUMBER AND NAME SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N	PROJECT NUMBER AND NAME NATO SEASPARROW/20173		
B. Accomplishments/Planned Program (Cont.)				
	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.176	2.933	5.340	7.684
RDT&E Articles Quantity				
<p>FY 02: Completed development of computer program suite for the NSSMS MK 57 Mod 7 (ReArchitecture) for CVNs with SSDS Mk 2 Mod 1. Supported Integration testing with SSDS Mk 2 Mod 1 at Wallops Island. Enter CSIT for CVN 76 with SSDS Mk 2 Mod 0 at ICSTF. Addressed all deficiencies accruing from either Wallops Island or ICSTF testing.</p> <p>FY 03/04/05: SSDS Post Integration: Building upon the current NSSMS MK 57 Mod 4 - 9 upgrade (Re-architected NSSMS) that provided an initial capability with SSDS MK 2 in support of the Maritime Force Protection (MFP) program, evolve the fire control system component to implement the additional organic capabilities required by the MFP Performance & Compatibility Requirements (P&CR) for CVNs. This effort will maintain compatibility with RNSSMS and evolving Next Generation Ship Defense post SSDS Mk 2, fully exploit RNSSMS performance capabilities, and develop RNSSMS capabilities consistent with the full-approved Integration Specifications. It will also support the evolutionary weapons and control system development to counter future evolving threats. Efforts scheduled for completion in FY 05.</p>				

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 4 of 26)

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<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 35%;">Funding:</th> <th style="text-align: right; width: 15%;">FY 2002</th> <th style="text-align: right; width: 15%;">FY 2003</th> <th style="text-align: right; width: 15%;">FY 2004</th> <th style="text-align: right; width: 15%;">FY 2005</th> </tr> </thead> <tbody> <tr> <td>Previous President's Budget: (FY 03 Pres Controls)</td> <td style="text-align: right;">28.468</td> <td style="text-align: right;">8.778</td> <td style="text-align: right;">8.285</td> <td style="text-align: right;">6.190</td> </tr> <tr> <td>(FY04/05 PRES Controls)</td> <td style="text-align: right;">28.530</td> <td style="text-align: right;">8.585</td> <td style="text-align: right;">18.043</td> <td style="text-align: right;">21.482</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">0.062</td> <td style="text-align: right; border-top: 1px solid black;">-0.193</td> <td style="text-align: right; border-top: 1px solid black;">9.758</td> <td style="text-align: right; border-top: 1px solid black;">15.292</td> </tr> <tr> <td colspan="5" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td>SBIR/STTR Transfer</td> <td style="text-align: right;">-0.340</td> <td></td> <td></td> <td></td> </tr> <tr> <td>ESSM LAUNCHER DEVELOPMENT</td> <td></td> <td></td> <td style="text-align: right;">2.900</td> <td></td> </tr> <tr> <td>ESSM FOT&E</td> <td></td> <td></td> <td style="text-align: right;">1.900</td> <td style="text-align: right;">8.000</td> </tr> <tr> <td>RNSSMS SSDS Integration</td> <td></td> <td></td> <td style="text-align: right;">5.500</td> <td style="text-align: right;">7.900</td> </tr> <tr> <td>Programatic Adjustment</td> <td style="text-align: right;">0.402</td> <td style="text-align: right;">-0.1</td> <td style="text-align: right;">-0.126</td> <td style="text-align: right;">-0.145</td> </tr> <tr> <td>INFLATION SAVINGS</td> <td></td> <td style="text-align: right;">-0.093</td> <td style="text-align: right;">-0.416</td> <td style="text-align: right;">-0.463</td> </tr> <tr> <td>Subtotal</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 3px double black;">0.062</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 3px double black;">-0.193</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 3px double black;">9.758</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 3px double black;">15.292</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule:</p> <p style="margin-left: 20px;">The ESSM schedule was initially delayed as a result of the Radome and relocation of the Rear Reference Antenna. These issues have been resolved and ESSM is proceeding thru the remaining tests with Aegis OPEVAL/TECHEVAL. Scheduled for 3rd Qtr FY 03.</p> <p style="margin-top: 20px;">Technical:</p> <p style="margin-left: 20px;">"Not Applicable."</p>					Funding:	FY 2002	FY 2003	FY 2004	FY 2005	Previous President's Budget: (FY 03 Pres Controls)	28.468	8.778	8.285	6.190	(FY04/05 PRES Controls)	28.530	8.585	18.043	21.482	Total Adjustments	0.062	-0.193	9.758	15.292	Summary of Adjustments					SBIR/STTR Transfer	-0.340				ESSM LAUNCHER DEVELOPMENT			2.900		ESSM FOT&E			1.900	8.000	RNSSMS SSDS Integration			5.500	7.900	Programatic Adjustment	0.402	-0.1	-0.126	-0.145	INFLATION SAVINGS		-0.093	-0.416	-0.463	Subtotal	0.062	-0.193	9.758	15.292
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EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5			PROGRAM ELEMENT NUMBER AND NAME SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N			PROJECT NUMBER AND NAME NATO SEASPARROW/20173				

D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
WPN BA-2 Other Missiles, Evolved SEASPARROW (ESSM) (230700)	41.3	42.7	112.8	102.6	114.6	142.3	134.4	148.4	945.7	1861.1
OPN BA-4 NATO SEASPARROW (523700, 523705)	10.5	40.5	32.8	57.1	79.5	62.2	68.2	62.5	CONT	CONT
Related RDT&E:										
PE 0603609N (Conventional Munitions)										
PE 0604307N (AEGIS Combat System Engineering)										
PE 0604755N (K2178 Quick Reaction Combat Capability (QRCC))										

E. ACQUISITION STRATEGY: *

ESSM is a directed sole source contract to Raytheon Missile Systems Company for LRIP, and upon successful completion of TECHEVAL/OPEVAL in FY 03, entering into Full Rate Production FY 04. Multi-year full rate production is the preferred approach for the NATO SEASPARROW Consortium.

The ESSM Launcher will be a Full and open Competition Contract restricted to U.S. Prime Contractors who have Produced and delivered to the fleet Vertical Launching Systems.

F. MAJOR PERFORMERS:

1. Raytheon Systems Co. Tuscon 10/02, 11/04 ESSM Testing/ Engineering support
2. Competitive contract - ESSM Launcher 02/03, 11/03, 1/05
3. Naval Air Weapons Center China Lake, Point Mugu CA - Missile TDA supporting Development/Testing Funding under SEATASKs to field activities 10/02, 10/03, 10/04
4. Naval Surface Warfare Center - Port Hueneme CA., Dahlgren Va - provide ISEA support to ESSM in development testing. Dahlgren - Performs safety analysis/Development testing.

Funding issued under SEATASKs to field activities 10/02, 10/03, 10/04

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY RD&E, N / BA-5			PROGRAM ELEMENT SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N			PROJECT NUMBER AND NAME NATO SEASPARROW/20173						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ESSM-Primary Hardware Development	LC/CPAF	RAYTHEON	141.230	0.423	01/03			2.126	11/04	Continue	Continue	
		TDW	3.746								3.746	3.746
Ancillary Hardware Development	CPAF	LOCKHEED/UDLP	46.706								46.706	46.706
Systems Engineering	VARIOUS	VARIOUS	22.622								22.622	22.622
ESSM Launching System	LC/CPAF	TBD	0.000	2.934	01/03	7.671	10/03	3.891	10/04	Continue	Continue	
NATO-Primary Hdwe Dev		RAYTHEON	30.627							0.000	30.627	30.627
Software development / Test		HUGHES/RAYTHEON	2.346			0.985	12/03	1.650	12/04		4.981	
Systems Engineering		VARIOUS	5.306								5.306	
SSDS Integration		RAYTHEON	0.000	2.105	01/03	5.340	12/03	7.781	10/04	Continue	Continue	
Subtotal Product Development			252.583	5.462		13.996		15.448		Continue	Continue	
Remarks:												
ESSM / NATO											0.000	
Integrated Logistics Support	WR	NSWC PHD	3.568								3.568	
Engr Support	WR	VARIOUS	3.895	0.300	10/02	0.300	10/03	0.325	10/04		4.820	
ESSM Launching System	WR	VARIOUS	0.000	0.100							0.100	
Integrated Logistics Support	WR	NSWC PHD	0.000			0.385	10/03			Continue	Continue	
Engr Support			0.000			0.195	10/03				Continue	
NATO-MK 91/SDSMS			0.000							Continue	Continue	
ENGR SUPPORT	WR	VARIOUS	5.617	0.200	10/02	0.300	10/03	0.325	10/04	Continue	Continue	
Integrated Logistics Support	WR	NSWC PHD	0.000	0.081	10/02			0.192	10/04	Continue	Continue	
Subtotal Support			13.080	0.681		1.180		0.842		Continue	Continue	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003		
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Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWC CL	12.374								12.374	
SDTS/DT OT 11C	WR	PT Mugu	0.000								0.000	
OPEVAL/TECHEVAL	WR	VARIOUS(Corona, APL,Dalhgren,NSWC PHD)	5.694	0.745	01/03	0.849	11/03	3.005	11/04		10.293	
Developmental Test & Evaluation	WR	APL	0.000	0.295		0.435		0.523		Continue	Continue	
Developmental Test & Evaluation	WR	DALHGREN	0.000	0.150		0.200		0.223		Continue	Continue	
Subtotal T&E			18.068	1.190		1.484		3.751		Continue	Continue	
Remarks:												
ESSM-ENGR SPT	VARIOUS	VARIOUS	4.258	0.165	VARIOUS	0.240	VARIOUS	0.250	VARIOUS	Continue	Continue	
ESSM-PM SPT	VARIOUS	VARIOUS	0.498								0.498	
ESSM-LABOR	PD/WR		5.013	0.845	VARIOUS	0.855	VARIOUS	0.865	VARIOUS	Continue	Continue	
ESSM - TRAVEL	PD/WR		1.410	0.187	VARIOUS	0.200	VARIOUS	0.220	VARIOUS	Continue	Continue	
ESSM- MISC	VARIOUS	VARIOUS	2.035	0.005	VARIOUS	0.010	VARIOUS	0.020	VARIOUS	Continue	Continue	
NATO TRAVEL/MISC	VARIOUS	VARIOUS	1.483	0.050	VARIOUS	0.078	VARIOUS	0.086	VARIOUS	Continue	Continue	
Subtotal Management			14.697	1.252		1.383		1.441		Continue	Continue	
Remarks:												
Total Cost			298.428	8.585		18.043		21.482		Continue	Continue	
Remarks:												

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DATE:

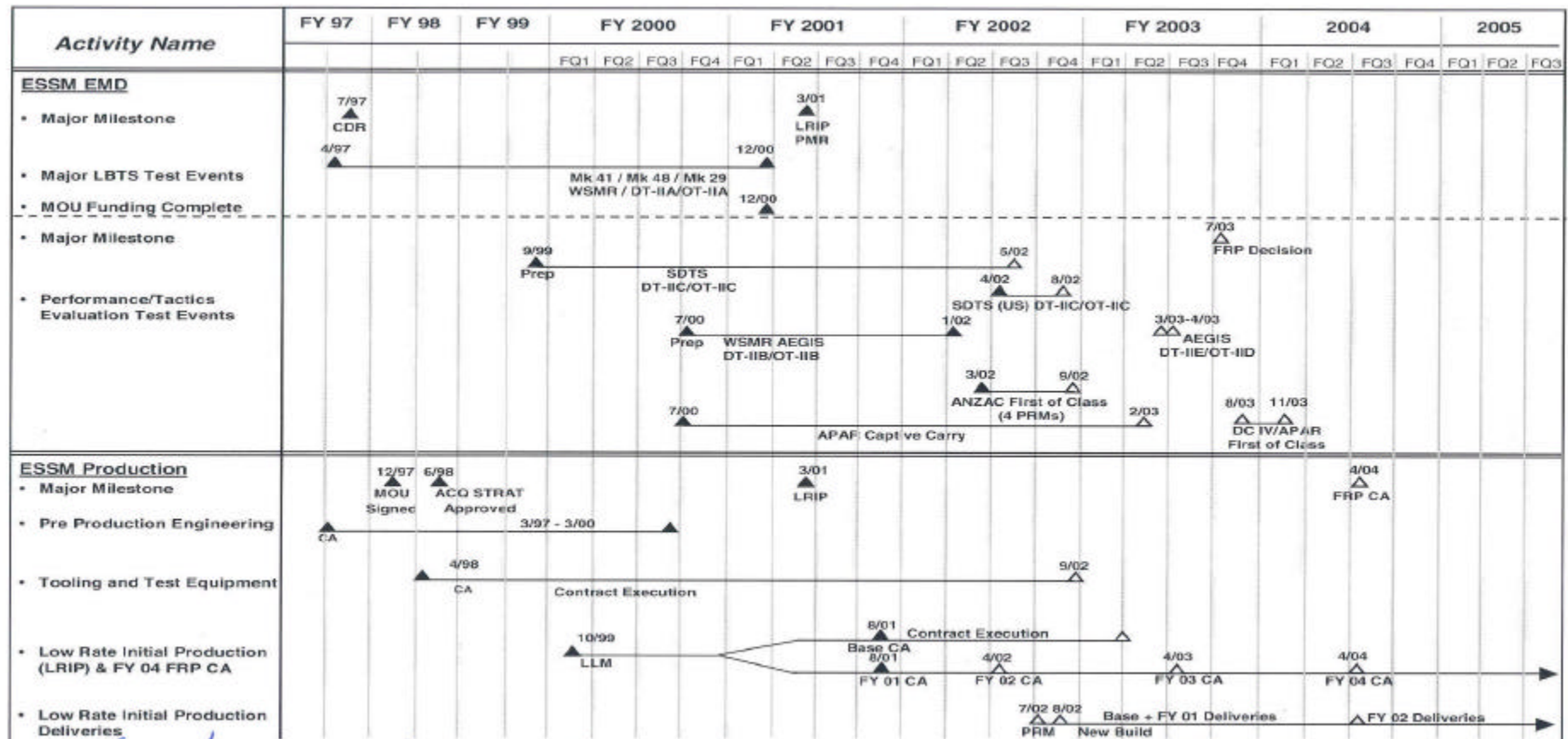
February 2003

PROGRAM ELEMENT NUMBER AND NAME

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SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N

NATO SEASPARROW/20173



Director, ESSM Division

Rev 10.4/29/2002

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* Not required for Budget Activities 1, 2, 3, and 6

Exhibit R-4, Schedule Profile
(Exhibit R-4, page 9 of 26)

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Exhibit R-4a, Schedule Detail					DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME			
RDT&BA-5	SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N				NATO SEASPARROW/20173 (ESSM)			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase	Prior year							
System Design Review (SDR)	Prior year							
Milestone II (MSII)	Prior year							
Contract Preparation	Prior year							
Software Specification Review (SSR)	Prior year							
Preliminary Design Review (PDR)	Prior year							
System Development	Prior year							
Critical Design Review (CDR)	Prior year							
Quality Design and Build	Prior year							
Test Readiness Review (TRR)	Prior year							
Developmental Testing (DT-IIA)	Prior year							
Eng Dev Model (EDM) Radar Delivery - Lab	Prior year							
Software Delivery 1XXSW	Prior year							
Preproduction Readiness Review (PRR)	Prior year							
EDM Radar Delivery - Flt Related	Prior year							
Milestone C (MS C)	Prior year							
Operational Testing (OT-IIA)	Prior year							
Start Low-Rate Initial Production I (LRIP I)	Prior year							
Software Delivery 2XXSW	Prior year							
Developmental Testing (DT-IIB1)	Prior year							
Developmental Testing (DT-IIB2)	Prior year							
Start Low-Rate Initial Production II	3Q							
Operational Testing (OT-IIB)	2Q-4Q							
Developmental Testing (DT-IIC)	1Q-4Q							
Functional Configuration Audit (FCA)	2Q-4Q	1Q-2Q						
Low-Rate Initial Production I Delivery		3Q						
Technical Evaluation (TECHEVAL)		2Q						
Physical Configuration Audit	Prior year							
Operational Evaluation (OT-IIC) (OPEVAL)		3Q						
Low-Rate Initail Production II Delivery			3Q					
IOC			2Q					
Full Rate Production (FRP) Decision		4Q						
Full Rate Production Start			3Q					
First Deployment			2Q					

R-1 SHOPPING LIST - Item No. 132

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 10 of 26)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-05		PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE			PROJECT NUMBER AND NAME 20167 / ROLLING AIRFRAME MISSILE			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	4.545*	10.513	5.033	9.550	3.231	3.289	3.306	3.364
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The purpose of this program is to develop a surface-to-air self-defense system utilizing a dual mode, passive Radio Frequency/Infrared 5" Rolling Airframe Missile. The baseline system (Block 0) provides a self-defense capability against active radar-guided anti-ship missiles and was developed on an equal cost share basis with the Government of the Federal Republic of Germany. The RAM Block 1 provides a capability against passive anti-ship missiles, very low altitude missiles, and maneuvering missiles through the incorporation of an infrared all-the-way mode seeker and improved fuze. The RAM Block 1 MOD 3 upgrade program, which provides an additional capability against helicopters, aircraft and surface craft, is a joint requirement of the U.S. and Federal Republic of Germany agreed to in a Memorandum of Agreement (MOA) signed by both parties. This system is designed to counter anti-ship cruise missile raids and other threats to provide for ship survivability with accurate terminal guidance, proven lethality, and no shipboard post launch dependence. Since FY03, \$8.0M has been added to FY05 for the purpose of integrating RAM on the FFG Ship Class.

*FY02 Project Cost should reflect a Congressional Add of \$6.724 for a Total Program control of \$11.269. These funds are currently reflected under Program Element 0604755N, Project Numbers 29080 (Currently listed as Project Number K2190 (\$1.347) and 29081 (\$5.377). Funding was used to commence development and test of the SEARAM ECP to the RAM MK31 Guided Missile Weapon System.

R-1 SHOPPING LIST - Item N 132

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Exhibit R-2a, RDTE Project Justification
(Exhibit R-2a, page 11 of 26)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-05	PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE	PROJECT NUMBER AND NAME 20167 / ROLLING AIRFRAME MISSILE																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>RAM Block 1 Testing</td><td style="text-align: center;">4.166</td><td style="text-align: center;">5.366</td><td style="text-align: center;">4.482</td><td style="text-align: center;">1.159</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	RAM Block 1 Testing	4.166	5.366	4.482	1.159	RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
RAM Block 1 Testing	4.166	5.366	4.482	1.159															
RDT&E Articles Quantity																			
In FY02 funded Block 1 MOD 3 Contractor Test and Evaluation (CTE). In FY03-05, this line funds Block 1 FOT&E and government MOD 3 testing and analysis.																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>RAM Block 1 Eng//Interface Support</td><td style="text-align: center;">0.062</td><td style="text-align: center;">0.580</td><td style="text-align: center;">0.165</td><td style="text-align: center;">8.391</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	RAM Block 1 Eng//Interface Support	0.062	0.580	0.165	8.391	RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
RAM Block 1 Eng//Interface Support	0.062	0.580	0.165	8.391															
RDT&E Articles Quantity																			
This line supports on-going efforts in developing RAM interfaces with External Designation Systems (EDS). The \$8.0M plus-up in FY05 is for integration efforts on the FFG Ship Class.																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Improvement for Missile Deficiency</td><td style="text-align: center;">0.317</td><td style="text-align: center;">4.567</td><td style="text-align: center;">0.386</td><td style="text-align: center;">0.000</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Improvement for Missile Deficiency	0.317	4.567	0.386	0.000	RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Improvement for Missile Deficiency	0.317	4.567	0.386	0.000															
RDT&E Articles Quantity																			
FY02 funding initiated the improvement of missile capability deficiency against emergent threat. FY03-04 funds the completion of this necessary improvement.																			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-05	PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE	PROJECT NUMBER AND NAME 20167 / ROLLING AIRFRAME MISSILE		

C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget:	4.775	10.750	5.311	2.100
Current BES/President's Budget	4.545	10.513	5.033	9.550
Total Adjustments	-0.230	-0.237	-0.278	7.450
Summary of Adjustments				
RAM SPQ 9B SHIP SELF DEFENSE				2.000
RAM REALIGNMENT				6.000
Programmatic Adjustments	0.005	-0.020	-0.161	-0.357
Section 8123: Management Refo	-0.042			
FY2002 SBIR (dtd 5-15-02)	-0.076			
Sec. 313, PL 107-206: Revised	-0.010			
FY02 BTR (July-02)	-0.094			
Business Process Reform (8100)		-0.043		
Economic Assumptions (Sec 8135)	-0.013	-0.060		
NSWC PBD 426			-0.002	
NWCF Rates			0.001	0.013
Inflation Savings		-0.114	-0.116	-0.206
Subtotal	-0.230	-0.237	-0.278	7.450

Schedule:

RAM has been scheduled for installation on the FFG Ship Class. In FY05, \$8.0M has been added to integrate RAM on the FFG Ship Class.

Technical:

Not Applicable.

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Exhibit R-2a, RDTEEN Project Justification
(Exhibit R-2a, page 13 of 26)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification									DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-05			PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE			PROJECT NUMBER AND NAME 20167 / ROLLING AIRFRAME MISSILE				

D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN LINE 523800 (RAM)	\$31.099	\$27.480	\$31.300	\$35.364	\$46.276	\$35.229	\$35.345	\$35.512	\$161.700	\$927.011
WPN LINE 224200 (RAM)	\$46.416	\$64.127	\$48.315	\$47.510	\$136.183	\$70.897	\$99.641	\$102.396	\$555.696	\$1,304.800

E. ACQUISITION STRATEGY: *

RAM Block 1 MOD 3 Development and Testing FY2002-2005; Improvement of missile capability deficiency against emergent threat FY2002-2004.

F. MAJOR PERFORMERS: **

Raytheon Systems Company - Tucson, AZ - RAM Prime Contractor for Development and Contractor Test and Evaluation. Award Dates: FY03 - 11/02; FY04 - 11/03; FY05 - 11/04

Naval Air Weapons Center, China Lake - China Lake, CA - Missile ISEA supporting RAM development and testing.
Award dates are N/A, since funding will be provided under NAVSEA Seataask to field activity.

Naval Surface Warfare Center, Port Hueneme - Port Hueneme, CA - Launcher ISEA supporting development, testing, integration and test ranges.
Award dates are N/A, since funding will be provided under NAVSEA Seataask to field activity.

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME							
RDT&E, N / BA-05			0604756N SHIP SELF DEFENSE			20167 / ROLLING AIRFRAME MISSILE							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Primary Hardware Development	SS/CPFF	Raytheon Co, Tucson AZ		4.330	11/02	0.386	11/03	0.000		Continuing	Continuing		
Block 1 MOD 3 Interface Spt	SS/CPFF	Raytheon Co, San Diego CA		0.000		0.000		0.875	11/04	Continuing	Continuing		
Block 1 MOD 3 Interface Spt		JHU/APL		0.090		0.050		0.375		Continuing	Continuing		
Block 1 MOD 3 Interface Spt		NSWC/PHD		0.000		0.000		6.539		Continuing	Continuing		
Block 1 MOD 3 Eng		NAWC/China Lake		0.201		0.036		0.375		Continuing	Continuing		
Block 1 MOD 3 IR Spt		NRL		0.175		0.054		0.175		Continuing	Continuing		
Block 1 MOD 3 Sys Safety		NSWC/DD		0.114		0.025		0.056		Continuing	Continuing		
Miscellaneous											0.000		
											0.000		
											0.000		
											0.000		
Subtotal Product Development			0.000	4.910		0.551		8.395		Continuing	Continuing		
Remarks:													
Development Support											0.000		
Software Development											0.000		
Integrated Logistics Support											0.000		
Configuration Management											0.000		
Technical Data											0.000		
Studies & Analyses											0.000		
GFE											0.000		
Award Fees											0.000		
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000		
Remarks:													

R-1 SHOPPING LIST - Item No. 132

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 15 of 26)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-05			0604756N SHIP SELF DEFENSE			20167 / ROLLING AIRFRAME MISSILE						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
DT&E/OT&E/FOT&E/CTE	SS/CPAF	Raytheon Co, Tucson AZ		0.750	11/02	0.500	11/03	0.000	11/04	Continuing	Continuing	
DT&E/OT&E		China Lake CA, PHD CA		0.000		3.826		0.500		Continuing	Continuing	
FOT&E		China Lake CA, PHD CA		4.700		0.000		0.000		Continuing	Continuing	
CTE Support		NSWC/PHD CA		0.000		0.000		0.000		Continuing	Continuing	
Miscellaneous		Various		0.000		0.000		0.500		Continuing	Continuing	
											0.000	
											0.000	
Subtotal T&E			0.000	5.450		4.326		1.000		Continuing	Continuing	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel				0.153		0.156		0.155		Continuing	Continuing	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.153		0.156		0.155		Continuing	Continuing	
Remarks:												
Total Cost			0.000	10.513		5.033		9.550		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 132

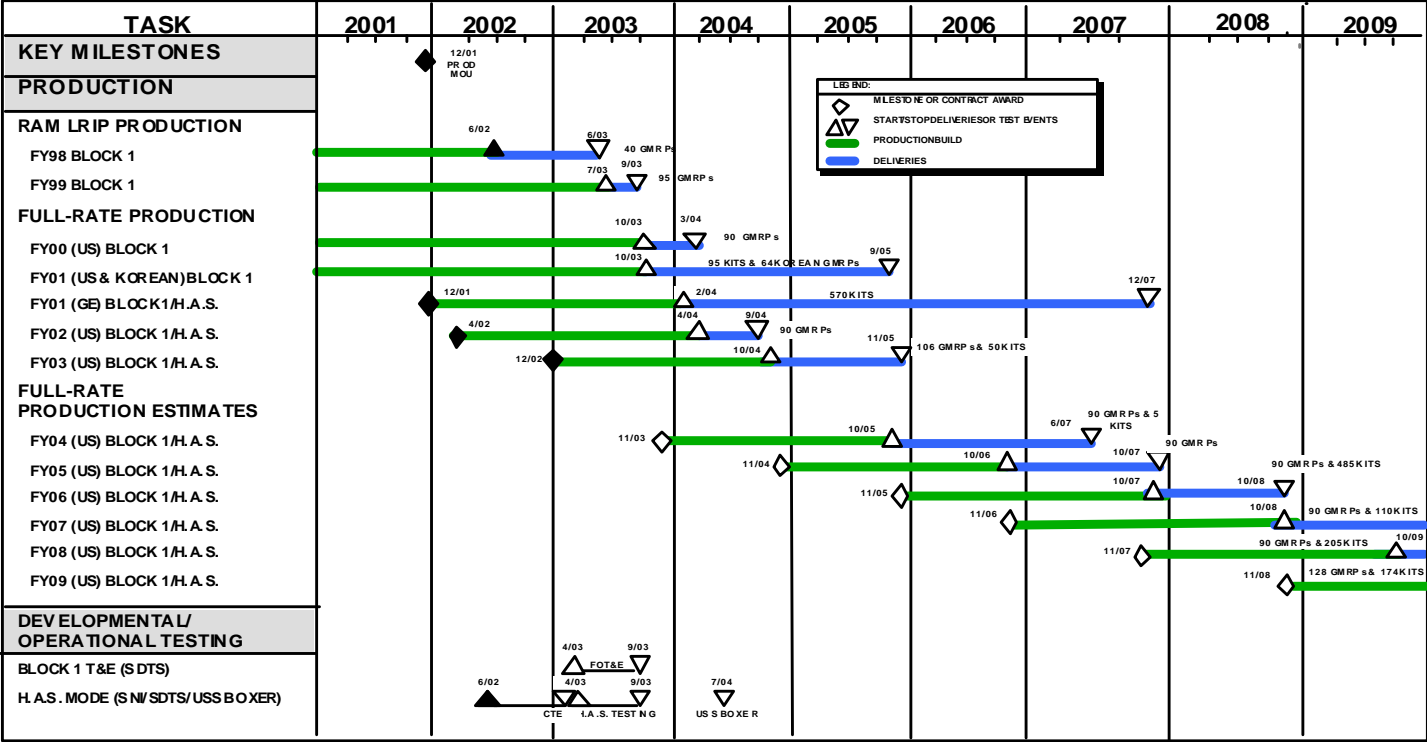
UNCLASSIFIED

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 16 of 26)

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME		PROJECT NUMBER AND NAME
RDT&E, N / BA-5		SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N		NATO SEASPARROW/20173

Rolling Airframe Missile Program Plan



* Not required for Budget Activities 1, 2, 3, and 6

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CLASSIFICATION:

[illegible]

R-1 SHOPPING LIST - Item No. 132

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Exhibit R-4a, Schedule Detail

(Exhibit R-4a, page 18 of 26)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-05		PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE-ENGAGE			PROJECT NUMBER AND NAME 29081 / PHALANX CIWS SEA RAM			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		10.269						
RDT&E Articles Qty								
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The purpose of this ECP effort is to combine the PHALANX CIWS radar with the Rolling Airframe Missile (RAM) Block 1 Missile System. The overall SEARAM strategy is to field a low-risk-development cost system utilizing the proven capabilities and infrastructure of the RAM and PHALANX CIWS systems. This U.S. Navy SEARAM development leverages the successful demonstration by the United Kingdom of an industry prototype system aboard the HMS York. The SEARAM ORDALT ECP will provide improved detection and performance capabilities in a stand-alone self-defense system that will defeat the near-term, stressing Anti-Ship Cruise Missile (ASCM) threats. The FY03 Congressional Plus-up continues the U.S. Navy system/software engineering of the SEARAM ORDALT ECP.</p> <p>FY03 Project reflects a Congressional Add of \$ 10.269M under Program Element 0604756N Project Number 29081.</p>								

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Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 19 of 26)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-05	PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE-ENGAGE	PROJECT NUMBER AND NAME 29081 / PHALANX CIWS SEA RAM		
B. Accomplishments/Planned Program				
	FY 02	FY 03	FY 04	FY 05
SEARAM Development		10.269		
RDT&E Articles Quantity				
FY03 funding used to continue development of the SEARAM ECP for the RAM MK31 Guided Missile Weapon System.				
	FY 02	FY 03	FY 04	FY 05
RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05
RDT&E Articles Quantity				

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UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-05	PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE-ENGAGE	PROJECT NUMBER AND NAME 29081 / PHALANX CIWS SEA RAM		

C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget:	0.000	0.000	0.000	0.000
Current BES/President's Budget	0.000	10.269	0.000	0.000
Total Adjustments	0.000	10.269	0.000	0.000
Summary of Adjustments				
Phalanx CIWS SEARAM Ordalt Dev		10.500		
Business Process Reform (Sec 8100)		-0.042		
Economic Assumptions (Sec 8135)		-0.059		
Programmatic adjustment		-0.019		
Inflation Savings		-0.111		
Subtotal	0.000	10.269	0.000	0.000

Schedule:

"FY03 Congressional Plus-up continues development of SEARAM ECP to RAM MK31 Guided Missile Weapon System.

Technical:

Not Applicable.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME				
RDT&E, N / BA-05		0604756N SHIP SELF DEFENSE-ENGAGE				29081 / PHALANX CIWS SEA RAM				
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN LINE 523800 (RAM)	\$31.099	\$27.480	\$31.300	\$35.364	\$46.276	\$35.229	\$35.345	\$35.512	\$161.700	\$927.011
WPN LINE 224200 (RAM)	\$46.416	\$64.127	\$48.315	\$47.510	\$136.183	\$70.897	\$99.641	\$102.396	\$555.710	\$1,304.800
E. ACQUISITION STRATEGY:										
SEARAM Development and Testing										
F. MAJOR PERFORMERS:										
Raytheon Systems Company - Tucson, AZ - RAM Prime Contractor for Development. Award Date: FY03 - 2/03.										

R-1 SHOPPING LIST - Item No. 132

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-05			0604756N SHIP SELF DEFENSE-ENGAGE			29081 / PHALANX CIWS SEA RAM						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	Raytheon, Tucson AZ		10.269	02/03					0.000	10.269	
Ancillary Hardware Development											0.000	
Aircraft Integration											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering										0.000	0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	10.269		0.000		0.000		0.000	10.269	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 132

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Exhibit R-3, RDTEN Project Justification
(Exhibit R-3, page 23 of 26)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-05			PROGRAM ELEMENT 0604756N SHIP SELF DEFENSE-ENGAGE			PROJECT NUMBER AND NAME 29081 / PHALANX CIWS SEA RAM						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			0.000	10.269		0.000		0.000		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 132

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Exhibit R-3, RDTEN Project Justification
(Exhibit R-3, page 24 of 26)

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R-4

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:				August 2002				
APPROPRIATION/BUDGET ACTIVITY										PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME										
RDT&E, N / BA-05										0604756N SHIP SELF DEFENSE-ENGAGE												29081 / PHALANX CIWS SEA RAM										
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	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																																
System Engineering*																																

Contract Modification
▲

R-1 SHOPPING LIST - Item No. 132

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CLASSIFICATION:

[illegible]

R-1 SHOPPING LIST - Item No. 132

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 26 of 26)