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EXHIBIT R-2, RDT&E Budget Item Justification							DATE:	
							February 2005	
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE			
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5					SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N			
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	23.067	50.678	46.026	49.252	48.448	34.472	35.252	9.647
0173 / NATO SEASPARROW	14.628	21.145	5.938	4.885	4.957	5.040	5.132	5.215
0167 / 5" Rolling Airframe Missile	4.599	11.790	30.112	44.367	43.491	29.432	30.120	4.432
9081 / PHALANX CIWS SeaRAM	3.840	17.743	9.976					
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 Hard Kill. Development in this line will focus on hard kill capabilities in which missiles are used to intercept incoming Anti-Ship Cruise Missiles (ASCM).								
(U) ENGAGEMENT: Missile and system improvements necessary to meet their requirements are being addressed via NATO SEASPARROW Missile System (NSSMS) (0173), 5" Rolling Airframe Missile (RAM) (0167), and Phalanx CIWS SeaRAM (9081). Missile improvements are to include improved kinematic performance plus advanced seeker and low elevation fuzing/warhead capability improvements. System improvements include incorporation of Phalanx detection capability into RAM system (SeaRAM).								

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2005	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-05		PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE			PROJECT NUMBER AND NAME 0167 / ROLLING AIRFRAME MISSILE			
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	4.599	11.790	30.112	44.367	43.491	29.432	30.120	4.432
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. Since PB04, funding has been added (FY05-10) to initiate development and testing of a kinematic upgrade to the RAM. This upgrade will allow RAM to regain battlespace lost to emerging, more maneuverable ASCM threats. 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.								

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<p>B. Accomplishments/Planned Program</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%;">FY 04</td> <td style="width: 15%;">FY 05</td> <td style="width: 15%;">FY 06</td> <td style="width: 15%;">FY 07</td> </tr> <tr> <td>RAM Testing</td> <td>3.042</td> <td>0.000</td> <td>0.500</td> <td>0.000</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">FY04-06 funds Block 1 FOT&E and government MOD 3 testing and analysis.</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%;">FY 04</td> <td style="width: 15%;">FY 05</td> <td style="width: 15%;">FY 06</td> <td style="width: 15%;">FY 07</td> </tr> <tr> <td>RAM Block 1 Eng/Interface Support</td> <td>0.374</td> <td>0.000</td> <td>0.450</td> <td>1.890</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Supports on-going efforts in RAM engineering for emergent issues/obsolescence issues including EDS interface transition.</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%;">FY 04</td> <td style="width: 15%;">FY 05</td> <td style="width: 15%;">FY 06</td> <td style="width: 15%;">FY 07</td> </tr> <tr> <td>Improvement for Missile Deficiency</td> <td>1.027</td> <td>0.635</td> <td>1.050</td> <td>1.411</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">FY04-07 funding completes the improvement of emergent missile capability deficiencies.</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%;">FY 04</td> <td style="width: 15%;">FY 05</td> <td style="width: 15%;">FY 06</td> <td style="width: 15%;">FY 07</td> </tr> <tr> <td>Pre-Planned Product Improvement (P3I)</td> <td></td> <td>11.000</td> <td>27.950</td> <td>40.900</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">FY05-07 funding initiates development of RAM kinematic upgrade.</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%;">FY 04</td> <td style="width: 15%;">FY 05</td> <td style="width: 15%;">FY 06</td> <td style="width: 15%;">FY 07</td> </tr> <tr> <td>Travel</td> <td>0.156</td> <td>0.155</td> <td>0.162</td> <td>0.166</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>						FY 04	FY 05	FY 06	FY 07	RAM Testing	3.042	0.000	0.500	0.000	RDT&E Articles Quantity						FY 04	FY 05	FY 06	FY 07	RAM Block 1 Eng/Interface Support	0.374	0.000	0.450	1.890	RDT&E Articles Quantity						FY 04	FY 05	FY 06	FY 07	Improvement for Missile Deficiency	1.027	0.635	1.050	1.411	RDT&E Articles Quantity						FY 04	FY 05	FY 06	FY 07	Pre-Planned Product Improvement (P3I)		11.000	27.950	40.900	RDT&E Articles Quantity						FY 04	FY 05	FY 06	FY 07	Travel	0.156	0.155	0.162	0.166	RDT&E Articles Quantity				
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C. PROGRAM CHANGE SUMMARY: <table> <tr> <td>Funding:</td> <td>FY 2004</td> <td>FY 2005</td> <td>FY 2006</td> <td>FY 2007</td> </tr> <tr> <td>FY05 Presidents Budget</td> <td>4.977</td> <td>11.931</td> <td>30.042</td> <td>44.066</td> </tr> <tr> <td>FY06 Presidents Budget</td> <td>4.599</td> <td>11.790</td> <td>30.112</td> <td>44.367</td> </tr> <tr> <td>Total Adjustments</td> <td>-0.378</td> <td>-0.141</td> <td>0.070</td> <td>0.301</td> </tr> <tr> <td colspan="5">Summary of Adjustments</td> </tr> <tr> <td>FY04 SBIR</td> <td>-0.065</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Programmatic/Other Adjustments</td> <td></td> <td>-0.034</td> <td>0.070</td> <td>0.301</td> </tr> <tr> <td>Undistributed Congressional Reductions</td> <td></td> <td>-0.107</td> <td></td> <td></td> </tr> <tr> <td>BTR</td> <td>-0.300</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Cancelled Account</td> <td>-0.013</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Subtotal</td> <td>-0.378</td> <td>-0.141</td> <td>0.070</td> <td>0.301</td> </tr> </table> <p>Schedule:</p> <p>A Pre-Planned Performance Improvement upgrade will be initiated in FY05.</p> <p>Technical: N/A</p>					Funding:	FY 2004	FY 2005	FY 2006	FY 2007	FY05 Presidents Budget	4.977	11.931	30.042	44.066	FY06 Presidents Budget	4.599	11.790	30.112	44.367	Total Adjustments	-0.378	-0.141	0.070	0.301	Summary of Adjustments					FY04 SBIR	-0.065				Programmatic/Other Adjustments		-0.034	0.070	0.301	Undistributed Congressional Reductions		-0.107			BTR	-0.300				Cancelled Account	-0.013				Subtotal	-0.378	-0.141	0.070	0.301
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APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-05			PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE				PROJECT NUMBER AND NAME 0167 / ROLLING AIRFRAME MISSILE			
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</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>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN LINE 523800 (RAM)	\$29.791	\$26.804	\$17.488	\$10.298	\$9.295	\$8.932	\$9.136	\$9.287	\$0.000	\$666.950
WPN LINE 224200 (RAM)	\$47.622	\$47.229	\$86.944	\$81.038	\$110.311	\$86.058	\$91.705	\$93.552	\$420.100	\$1,303.759
E. ACQUISITION STRATEGY: *										
RAM Block 1 MOD 3 Development and Testing FY04-05; improvements of missile capability deficiency against emergent threat FY2004-2007. Kinematic Upgrade (P3I) development FY05-10.										
F. MAJOR PERFORMERS: **										
Raytheon Systems Company - Tucson, AZ - RAM Prime Contractor for Development and Contractor Test and Evaluation. Award Dates: FY04 - 11/03; FY05 - 11/04; FY06 - 11/05; FY07 - 11/06										
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 Seatask 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 Seatask to field activity.										

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Exhibit R-3 Cost Analysis (page 1)											DATE: February 2005			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
RDT&E, N / BA-05			0604756N SHIP SELF DEFENSE					0167 / ROLLING AIRFRAME MISSILE						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY04 Cost	FY04 Award Date	FY05 Cost	FY05 Award Date	FY06 Cost	FY06 Award Date	FY07 Cost	FY07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	Raytheon Co, Tucson AZ & Louisville, KY	3.544	1.027	11/03	0.635	11/04	0.900	11/05	1.211	11/06	Continuing	Continuing	
Primary Hardware Dev Spt	WX	NAWC/China Lake						0.150	11/05	0.200	11/06	Continuing	Continuing	
Block 1 MOD 3 Eng/Interface Spt	SS/CPFF	Raytheon Co, San Diego						0.350	11/05	1.740	11/06	Continuing	Continuing	
Block 1 MOD 3 Interface Spt	CPFF	JHU/APL	0.400	0.374	11/03			0.100	11/05	0.150	11/06	Continuing	Continuing	
Performance Improvement upgrade	SS/CPAF	Raytheon Co, Tucson AZ & Louisville, KY				7.033	11/04	24.538	11/05	34.250	11/06	Continuing	Continuing	
Performance Improvement upgrade	WX	CL/NRL/DD				3.667	11/04	3.012	11/05	6.250	11/06	Continuing	Continuing	
Performance Improvement upgrade	CPFF	JHU/APL				0.300	11/04	0.400	11/05	0.400	11/06	Continuing	Continuing	
Subtotal Product Development			3.944	1.401		11.635		29.450		44.201		Continuing	Continuing	
Development Support														
Software Development														
Integrated Logistics Support														
Configuration Management														
Technical Data														
Studies & Analyses														
GFE														
Award Fees														
Subtotal Support			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														

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Exhibit R-3 Cost Analysis (page 2)										DATE:					February 2005				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME												
RDT&E, N / BA-05			0604756N SHIP SELF DEFENSE				0167 / ROLLING AIRFRAME MISSILE												
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY04 Cost	FY04 Award Date	FY05 Cost	FY05 Award Date	FY06 Cost	FY06 Award Date	FY07 Cost	FY07 Award Date	Cost to Complete	Total Cost	Target Value of Contract					
DT&E/OT&E/FOT&E/CTE	SS/CPAF	Raytheon Co, Tucson AZ & Louisville, KY	1.244	1.040	11/03							Continuing	Continuing						
FOT&E	WX	China Lake CA, PHD CA	3.266	1.408	11/03							Continuing	Continuing						
Test Support	WX	China Lake CA, PHD CA						0.500	11/05			Continuing	Continuing						
CTE Support	WX	NSWC/PHD CA										Continuing	Continuing						
Miscellaneous		Various	0.827	0.594	11/03							Continuing	Continuing						
P3I Development and Systems Engineering																			
Subtotal T&E			5.337	3.042		0.000		0.500		0.000		Continuing	Continuing						
Contractor Engineering Support																			
Government Engineering Support																			
Program Management Support																			
Travel				0.156	10/03	0.155	10/04	0.162	10/05	0.166	10/06	Continuing	Continuing						
Transportation																			
SBIR Assessment																			
Subtotal Management				0.156		0.155		0.162		0.166		Continuing	Continuing						
Total Cost			9.281	4.599		11.790		30.112		44.367		Continuing	Continuing						

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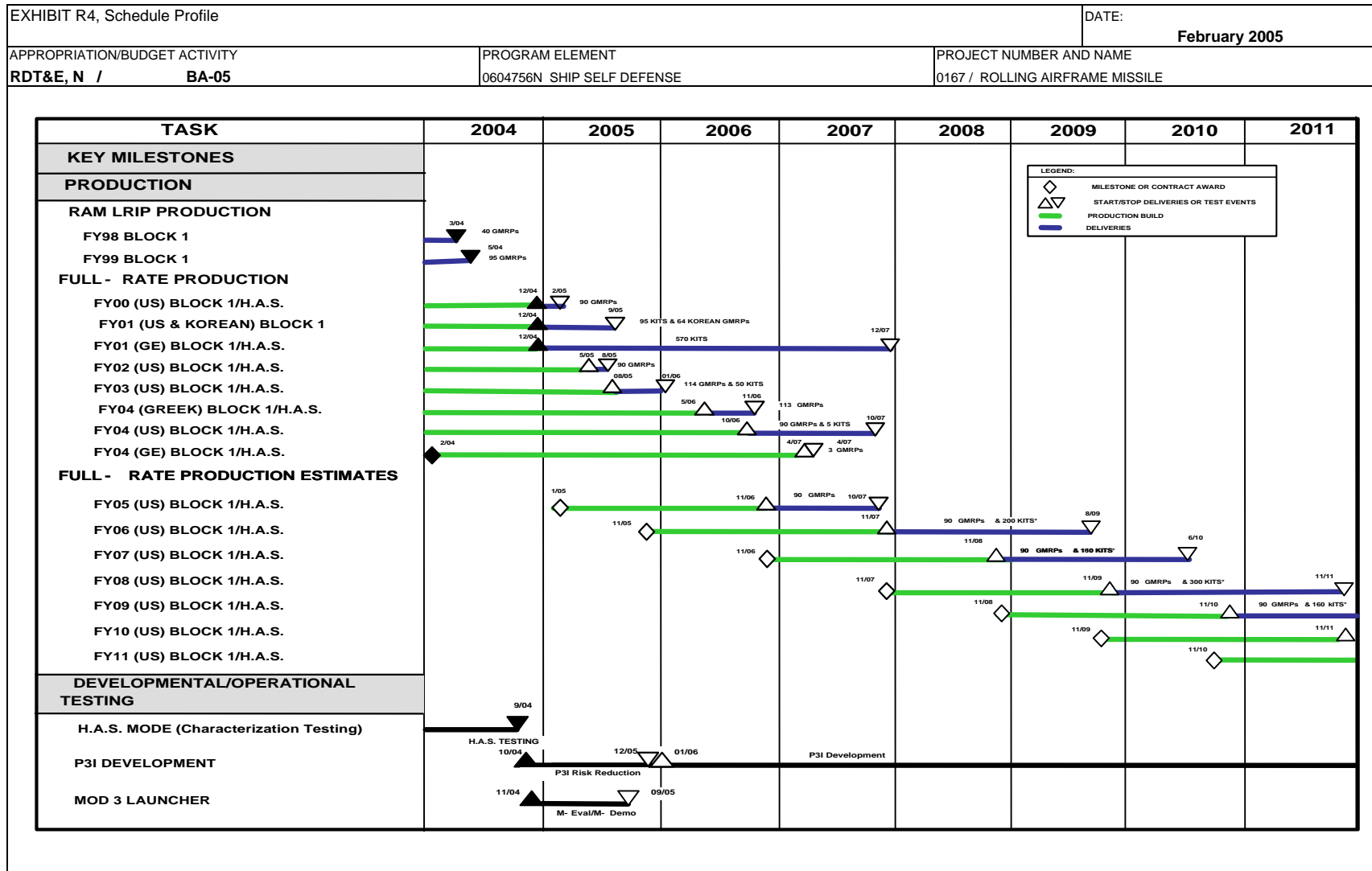
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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 7 of 26)

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

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Exhibit R-4a, Schedule Detail						DATE: February 2005			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME				
RDT&E, N BA-05	0604756N SHIP SELF DEFENSE				0167 / ROLLING AIRFRAME MISSILE				
Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
FY98 LRIP Deliveries	1Q-2Q								
FY99 LRIP Deliveries	1Q-3Q								
FY00 Full Rate Production (FRP) Deliveries		1Q							
FY02 FRP Deliveries		3Q-4Q	1Q-2Q						
FY03 FRP Deliveries		4Q	1Q						
FY04 FRP Contract Award	1Q								
FY04 FRP Deliveries				1Q-4Q	1Q				
FY05 FRP Contract Award		2Q							
FY05 FRP Deliveries				1Q-4Q	1Q				
FY06 FRP Contract Award			1Q						
FY06 FRP Deliveries					1Q-4Q				
FY07 FRP Contract Award				1Q					
FY07 FRP Deliveries						1Q-4Q			
FY08 FRP Contract Award					1Q				
FY08 FRP Deliveries							1Q-4Q		
FY09 FRP Contract Award						1Q			
FY09 FRP Deliveries								1Q-4Q	
FY10 FRP Contract Award							1Q		
FY10 FRP Deliveries									
FY11 FRP Contract Award								1Q	
FY11 FRP Deliveries									
Block 1 FOT&E	1Q								
Block 1 MOD 3 H.A.S. Testing	1Q-4Q								
M-Eval/M-Demo		1Q-4Q							
HAS/SeaRAM Integration			1Q-4Q						
P3I Development		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			
P3I DT/OT							1Q-3Q		

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COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	3.840	17.743	9.976	0.000	0.000	0.000	0.000	0.000
RDT&E Articles Qty								
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The purpose of this ECP effort is to combine the PHALANX Close-In Weapons System (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 FY04 Congressional Plus-up continued the U.S. Navy system/software engineering of the SeaRAM ORDALT ECP. FY05-06 funding completes development and testing of the ECP.								

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B. Accomplishments/Planned Program				
	FY 04	FY 05	FY 06	FY 07
SeaRAM Development	3.840	11.401	0.500	0.000
RDT&E Articles Quantity				
FY04-06 funding used to continue development of the SeaRAM ECP for the RAM MK31 Guided Missile Weapon System.				
	FY 04	FY 05	FY 06	FY 07
SeaRAM Testing	0.000	6.312	9.376	0.000
RDT&E Articles Quantity				
Contractor Test and Evaluation, analysis, and planning for DT/OT.				
	FY 04	FY 05	FY 06	FY 07
Travel	0.000	0.030	0.100	0.000
RDT&E Articles Quantity				

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EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2005		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-05		PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE-ENGAGE			PROJECT NUMBER AND NAME 9081 / PHALANX CIWS SEA RAM					
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</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>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN LINE 523800 (RAM)	\$29.791	\$26.804	\$17.488	\$10.298	\$9.295	\$8.932	\$9.136	\$9.287	\$0.000	\$666.950
WPN LINE 224200 (RAM)	\$47.622	\$47.229	\$86.944	\$81.038	\$110.311	\$86.058	\$91.705	\$93.552	\$420.100	\$1,303.759
E. ACQUISITION STRATEGY:										
SeaRAM Development and Testing										
F. MAJOR PERFORMERS:										
Raytheon Systems Company - Tucson, AZ - SeaRAM Prime Contractor for Development. Award Date: FY04 - 02/04; FY05 -11/04; FY06 - 11/05										
Naval Air Weapons Center, China Lake - China Lake, CA - Supporting SeaRAM development and testing. Award dates are N/A, since funding will be provided under NAVSEA Seatask to field activity.										
Naval Surface Warfare Center, Port Hueneme - Port Hueneme, CA - Supporting development, testing, integration and test ranges. Award dates are N/A, since funding will be provided under NAVSEA Seatask to field activity.										

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Exhibit R-3 Cost Analysis (page 1)											DATE: February 2005			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT				PROJECT NUMBER AND NAME								
RDT&E, N / BA-05		0604756N SHIP SELF DEFENSE (ENGAGE: HARD KILL)				9081 / PHALANX CIWS SEARAM								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY04 Cost	FY 04 Award Date	FY05 Cost	FY 05 Award Date	FY06 Cost	FY 06 Award Date	FY07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	Raytheon, Tucson AZ & Louisville, KY		3.840	02/04	6.901	11/04			0.000			10.741	
Ancillary Hardware Development														
Aircraft Integration														
Ship Integration	SS/CPFF	Raytheon, Tucson AZ & Louisville, KY				3.500	11/04			0.000			3.500	
Ship Suitability														
Systems Engineering	IPR	EG&G				0.500	11/04	0.500	11/05	0.000			1.000	
Training Development														
Studies/Analysis	CPFF	APL				0.500	11/04			0.000			0.500	
Tooling														
GFE														
Award Fees														
Subtotal Product Development			0.000	3.840		11.401		0.500		0.000			15.741	
Remarks:														
Development Support														
Software Development														
Integrated Logistics Support														
Configuration Management														
Technical Data														
Studies & Analyses														
GFE														
Award Fees														
Subtotal Support			0.000	0.000		0.000		0.000		0.000		0.000	0.000	
Remarks:														

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Exhibit R-3 Cost Analysis (page 2)											DATE: February 2005			
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Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 04 Cost	FY 04 Award Date	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
Contractor Test & Evaluation	SS/CPAF	Raytheon, Tucson AZ & Louisville, KY				3.812	11/04	1.404	11/05				5.216	
CT,DT&E, OT	WX	NSWC/PHD& China Lake				2.500	11/04	7.972	11/05				10.472	
Live Fire Test & Evaluation														
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E			0.000	0.000		6.312		9.376		0.000			15.688	
Remarks:														
Contractor Engineering Support														
Government Engineering Support														
Program Management Support														
Travel						0.030	10/04	0.100	10/05				0.130	
Transportation														
SBIR Assessment														
Subtotal Management			0.000	0.000		0.030		0.100		0.000			0.130	
Remarks:														
Total Cost			0.000	3.840		17.743		9.976		0.000			31.559	
Remarks:														

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EXHIBIT R4, Schedule Profile						DATE: February 2005	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-05			PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE (ENGAGE: HARD KILL)			PROJECT NUMBER AND NAME 9081 / PHALANX CIWS SEARAM	
Fiscal Year	2003	2004	2005	2006	2007	2008	2009
System Development				<div> Milestone Contract Award Start/Stop Deliveries Or Test Events Production Build Deliveries </div>			
CDR							
Testing CTE/NTE							
Testing DT/OT							
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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/0173			
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	14.628	21.145	5.938	4.885	4.957	5.040	5.132	5.215
RDT&E Articles Qty								
<div>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</div> <div>This project encompasses two (2) primary efforts to enhance ship self defense:</div> <div>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.</div> <div>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.</div>								

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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/0173		
B. Accomplishments/Planned Program				
	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	3.187	2.126	3.254	3.299
RDT&E Articles Quantity				
<p>Continued AEGIS S Band development. Conducted U.S. Unique DT-IIC/OT-IIC firings on SDTS and TECHEVAL/OPEVAL (DT-IIE/OT-IID) on AEGIS platforms. Correct engineering deficiencies identified as a result of TECHEVAL / OPEVAL. Provides funding for the ESSM S2S/HOH firings and firings associated with DT/OT on Aegis/DDG platforms. This provides for the U.S. share of Cooperative efforts associated with ESSM engineering studies and other development Initiatives.</p>				
	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	6.505	3.891	1.200	0.500
RDT&E Articles Quantity				
<p>Development:Utilizing existing technology and the Mk 29 Trainable Launcher, develop a program for the adaptation and U.S. certification of the launching system and make available for U.S. Navy deployment. Provide for the development to accommodate Evolved SEASPARROW Missiles which will provide full dimensional protection against the evolutionary threat of ASCMs on non-AEGIS platforms. Conduct restrained firings and DT/OT on the Self Defense Test ship in FY 05. Correct engineering deficiencies identified as a result of DT/OT.</p>				
	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.845	7.347	0.000	0.000
RDT&E Articles Quantity				
<p>Introduces Test and Evaluation of the ESSM Baseline Missile software for CV/CVNs. The CV/CVN/LHD Classes will see introduction of ESSM in FY 05 with the MK29/ESSM Launcher. RNSSMS/SSDS MK 2. FOT &E will be required to validate Combat system effectiveness.</p>				

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B. Accomplishments/Planned Program (Cont.)				
	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	3.091	7.781	0.750	0.000
RDT&E Articles Quantity				
<p>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 06.</p>				
	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.734	1.086
RDT&E Articles Quantity				
<p>Provide funding for the Combat System Integration Technical Direction Agent (TDA) who will provide engineering support for combat system performance and risk mitigation. The TDA will leverage its technical expertise and leadership to cover a broad range of activities such as defining near-term and future requirements for current systems and future upgrades, maintain system performance models to evaluate system improvements, threat changes and operational environment conditions, verify models and simulations to promote program success through application of rigorous and disciplined systems engineering principles and practices in a consistent manner across system elements over the program life cycle, make prudent use of authoritative technical expertise for advice and independent review, identify a range of technically acceptable alternatives to resolve engineering issues, assist in development of T&E planning, and continue to maintain project office essential research and engineering capabilities and corporate memory.</p>				

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E. ACQUISITION STRATEGY: * <p>ESSM is a directed sole source contract to Raytheon Missile Systems Company for LRIP, and after successful completion of TECHEVAL/OPEVAL in FY 03, entered into Full Rate Production FY 04. Multi-year full rate production is the preferred approach for the NATO SEASPARROW Consortium.</p>																																																																							
F. MAJOR PERFORMERS: <ol style="list-style-type: none"> 1. Raytheon Missile Co. Tuscon 2/04, 11/04 ESSM Testing/ Engineering support 2. Raytheon Company (IDS) Portsmouth R.I. - MK 29 GMLS/ESSM Dev 2/04 -2/05 3. Naval Air Weapons Center China Lake, Point Mugu CA - Missile TDA supporting Development/Testing Funding under SEATASKs to field activities 10/04, 10/05 4. Naval Surface Warfare Center - Port Hueneme CA., Dahlgren Va - provide ISEA support to ESSM in development testing. Dahlgren - Performs safety analysis/Development testing. <p>Funding issued under SEATASKs to field activities 10/04, 10/05</p>																																																																							

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Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ESSM-Primary Hardware Development	LC/CPAF	RAYTHEON	141.230			2.126	11/04					Continuing	Continuing	
	RX	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
MK 29/ESSM Launcher Upgrade	LC/CPAF	RAYTHEON SYS	0.734	6.505	02/04	3.891	01/05	0.500	01/06			Continuing	Continuing	
NATO-Primary Hdwe Dev	CPFF	RAYTHEON SYS	30.627									0.000	30.627	30.627
Software development / Test	CPFF	RAYTHEON SYS	2.346	0.985	01/04	1.650	12/04	1.447	12/05	1.606	12/06	Continuing	Continuing	
Systems Engineering/Firing Spt		VARIOUS	5.306										5.306	
SSDS Integration	CPFF	RAYTHEON SYS	1.846	2.699	01/04	7.690	12/04	0.750	10/05			Continuing	Continuing	
Subtotal Product Development			255.163	10.189		15.357		2.697		1.606		Continuing	Continuing	
Remarks:														
ESSM / NATO														
Integrated Logistics Support	WR	NSWC PHD	3.568									0.000	3.568	
Engr Support	WX	VARIOUS	3.895			0.312	10/04					0.000	4.207	
MK 29/ESSM Launcher Upgrade	WX	Dahlgren/PHD	0.375									0.000	0.375	
Engr Support	WX	VARIOUS	0.000	0.195	10/03							Continuing	Continuing	
NATO-MK 91/SSDS Integ	WX	Dahlgren/PHD	0.000	0.834	12/03							0.000	0.834	
Engr Support	WX	VARIOUS	5.817	0.227	10/03	0.320	10/04					0.000	6.364	
Engr Support	WX	NSWC PHD	0.081			0.181	10/04	0.145	10/05	0.185	10/06	Continuing	Continuing	
Subtotal Support			13.736	1.256		0.813		0.145		0.185		Continuing	Continuing	
Remarks:														

R-1 SHOPPING LIST - Item No. 127

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2005				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-5			SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N			NATO SEASPARROW/0173								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 04 Cost	FY 04 Award Date	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
Developmental Test & Evaluation	WR	NAWC CL	12.974	0.489	10/03								13.463	
OPEVAL/TECHEVAL/Test Firings	WR	VARIOUS(Corona, IHD,Dalhgren,NSWC PHD)	5.884	0.676	01/04	2.799	11/04	1.696	12/05	1.707	12/06	0.000	12.762	
Developmental Test & Evaluation	CPFF	APL	0.506	0.435	01/04	0.523	12/04	0.285	12/05	0.267	12/06	Continuing	Continuing	
Developmental Test & Evaluation	WR	DALHGREN	0.000	0.200	10/03	0.218	12/04	0.000		0.000		Continuing	Continuing	
Subtotal T&E			19.364	1.800		3.540		1.981		1.974		Continuing	Continuing	
Remarks:														
ESSM-ENGR SPT	WX	VARIOUS	4.423	0.240	VARIOUS	0.250	VARIOUS	0.000		0.000		Continuing	Continuing	
ESSM-PM SPT	WX	VARIOUS	0.498					0.000		0.000		Continuing	Continuing	
ESSM-LABOR	PD/WX		5.858	0.855	10/03	0.860	10/04	0.865	10/05	0.870	10/06	Continuing	Continuing	
ESSM - TRAVEL	PD/WX		1.597	0.200	10/03	0.225	10/04	0.180	10/05	0.180	10/06	Continuing	Continuing	
ESSM- MISC	VARIOUS	VARIOUS	2.035	0.010	10/03	0.020	10/04	0.000		0.000		Continuing	Continuing	
NATO TRAVEL/MISC	PD/WX	VARIOUS	1.533	0.078	10/03	0.080	10/04	0.070	10/05	0.070	10/06	Continuing	Continuing	
Subtotal Management			15.944	1.383		1.435		1.115		1.120		Continuing	Continuing	
Total Cost														
			304.207	14.628		21.145		5.938		4.885		Continuing	Continuing	
Remarks:														

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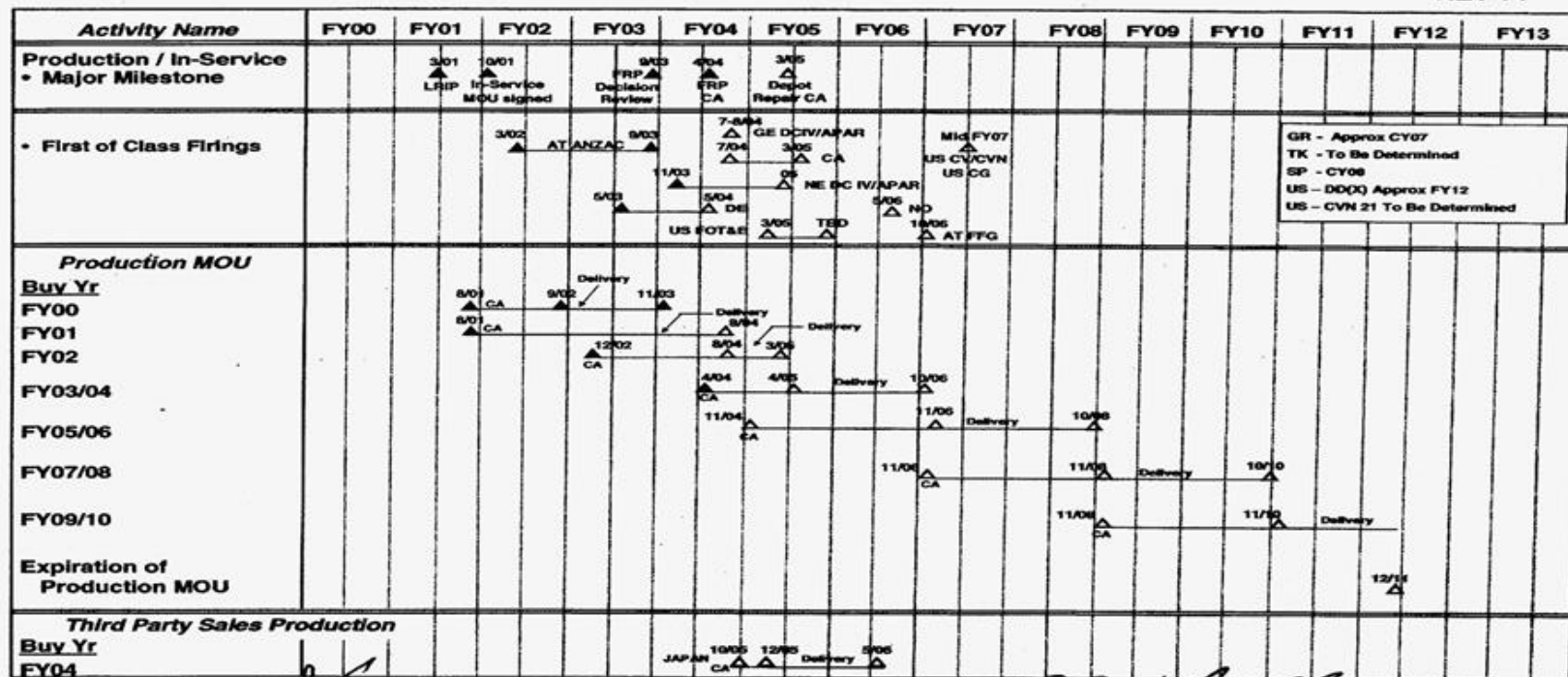
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CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: February 2005
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/0173

Master ESSM Program Schedule

May 2004
REV 14



CAPT B. Cramp, Project Manager

Director, Project Operations Division

Director, ESSM Division

79FV8a RD.5/18/2004

R-1 SHOPPING LIST - Item No. 127

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

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