

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7					R-1 ITEM NOMENCLATURE 0205601N HARM Improvement			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	31.016	60.263	49.381	132.290	116.729	131.322	82.500	28.832
A1780 HARM Improvement	11.592	3.807	2.013	1.749	3.697	3.706	3.828	3.839
A2185 Adv. Anti-Radiation Guided Missile (AARGM)	18.200	47.531	28.739	53.553	67.409	91.180	41.206	
A2211 Common Missile*	1.224	7.950	13.904	59.614	33.090	36.436	37.466	24.993
A3056 Direct Attack Guided Rocket (DAGR)/APKWS			4.725	12.536	12.533			
A3057 Common Defense System				4.838				
A9272 Low Cost High Temp Material		0.975						
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Congressional Addds: \$14.7 million in FY 2002 for AARGM risk reduction efforts and producibility enhancements, less Congressional undistributed reductions; \$1.0 million in FY 2003 for Low Cost High Temperature Material for Radome and Antennas, less Congressional undistributed reductions. (U) HIGH-SPEED ANTI-RADIATION (HARM) IMPROVEMENT: The International HARM Upgrade Program (IHUP) (Block IIIB/VI) is a tri-national Precision Navigation Unit (PNU) cooperative program consisting of a USN-unique tactical software upgrade and a hardware upgrade which includes an Inertial Measurement Unit (IMU) and a Global Positioning System (GPS) receiver. This upgrade will provide a much improved guidance capability for the current AGM-88B missile (in German and Italian inventories) and AGM-88C missile (in U.S. inventory). This IMU/GPS System will be retrofitted into existing missiles, as a kit. HARM Improvement includes efforts to conduct Foreign Military Exploitation (FME) analysis and engineering to exploit vulnerabilities of foreign anti-radar threats. HARM Improvement includes funding for threat assessment, operational updates, and integration efforts. (U) ADVANCED ANTI-RADIATION GUIDED MISSILE (AARGM): AARGM is a Phase III Small Business Innovative Research (SBIR) program designed to develop and demonstrate an advanced multi-mode seeker to the AGM-88 HARM. A2983/Quick Bolt (QB) is an Advanced Concept Technology Demonstration (ACTD) of Joint-suppression of Enemy Air Defense (J SEAD) technology enhancements applicable to AARGM. An AARGM System Development and Demonstration (SD&D) will commence in FY03. The AARGM program plans production of 1,750 missiles (60) Low Rate Initial Production (LRIP) and 1,690 Full Rate Production modification kit(s). *Previously referred to as Modernized Hellfire.								

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<p>(U) <u>COMMON MISSILE (CM)</u>: Army lead joint service program to replace the aging legacy TOW, Maverick, and Hellfire missiles with a single multi-role weapon, IAW approved Navy, Army and Marine Corps mission needs statement for future multi-role precision guided weapons. The Department of the Navy (DoN) has a Memorandum of Understanding (MOU) with the Army for participation in the development of the Common Missile. Common Missile will provide Line of Sight (LOS), Non-Line of Sight (NLOS), and Beyond Line of Sight (BLOS) capabilities including precision strike with Fire & Forget technologies, increased range, and increased lethality for both Fixed Wing and Rotary Wing Aircraft. Common Missile will maximize the Warfighter's' operational flexibility by allowing them to effectively engage a variety of stationary and mobile targets, including advanced armor, bunkers, buildings, command and control vehicles, transporter/erector launchers and patrol craft.</p> <p>(U) <u>DIRECT ATTACK GUIDED ROCKET (DAGR)</u>: The DAGR is an Army ATD to develop a low cost Semi Active Laser (SAL) precision guidance section for existing 2.75 inch unguided rockets. DAGR offers the Navy precision, maximum stored kills per aircraft sortie, minimum collateral damage potential, and increased effectiveness over legacy unguided rockets. The guidance package can be assembled with existing unguided rocket components (warhead and rocket motor) and can be fired from existing rocket launchers. DAGR will provide and inexpensive, small, lightweight, precision guided weapon that is effective against soft and lightly armored targets and which enhances crew survivability with increased stand-off range. Army, Marine Corps, and recent Navy ASUW Mission Need Statements highlighted the requirement for a weapon system capable of employment from the SH-60 to counter a swarm threat of small attack boats.</p> <p>(U) <u>COMMON DEFENSE WEAPONS SYSTEM (CDWS)</u>: The Department of the Navy has a requirement to replace legacy weapons with an advanced crew served weapon for assault support helicopters. Specific applications include a machine gun to replace M2M and the XM-218.50 caliber machine guns that will provide a significant increase in firepower, accuracy, lethality and reliability, and will maximize survivability through suppressive fire capabilities. Funding will support requirements validation, advance technology demonstration, and prototype development.</p> <p>(U) <u>LOW COST HIGH TEMP MATERIALS</u>: Congressional add for design and development of low cost, high temperature materials for radome and antenna use. Funding will support the design and development of six new radome candidate material systems that are (1) safe for production processing, (2) low cost in manufacturing, (3) structurally strong at high temperatures, and (4) compliant with RF transmission requirements compatible with Air-to-Ground Missile Hardware. Congressional add for design and development of low cost, high temperature materials for radome and antenna use. This alternative radome capability will be developed to support AARGM, High-Speed Anti-Radiation (HSAD), and other follow-on AGM-88 configurations.</p>		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7		PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement			PROJECT NUMBER AND NAME A1780 HARM Improvement			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	11.592	3.807	2.013	1.749	3.697	3.706	3.828	3.839
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The High-speed Anti-Radiation Missile (HARM) is a joint service program with the Air Force (NAVY lead). The program has been in full production since FY 1983. Program Element 0205601N was used until FY 1990 to develop and test one hardware and two software upgrades to the HARM (AGM-88B, Block III & AGM-88C, Block IV) as Engineering Change Proposals (ECPs). Another ECP software program (Block IIIA & V) was recently developed (FY96 through FY99) to modify HARM software in order to meet operational requirements. The Block V tactical software upgrade gives HARM improved geographic specificity and improved capability against advanced waveforms. HARM Block IIIA/V software was distributed to the Fleet in FY00.

The International HARM Upgrade Program (IHUP)/Precision Navigation Unit (PNU) is a tri-national (U.S., Italy, and Germany) cooperative program designed to improve the HARM's effectiveness by enhancing the missile's probability of kill and reducing the potential for fratricide while making the missile easier to employ. The Program consists of significant hardware and software modifications to the missile's control and guidance sections. The USN frequently refers to the IHUP upgrade as Block IIIB/VI. The three nations involved have agreed to jointly fund the design, development, testing and production of hardware kits to be installed in the missile control section along with an improved software version to be installed in the missile guidance section. The HARM Block IIIB/VI program started development in FY98 and will commence production in FY03. Funding in FY00 through FY03 is dedicated to the HARM Block IIIB/IV program.

HARM Improvement includes efforts to conduct Foreign Military Exploitation (FME) analysis and engineering to exploit vulnerabilities of foreign anti-radar threats. HARM Improvement includes funding for threat assessment, operational updates, and integration efforts.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement	PROJECT NUMBER AND NAME A1780 HARM Improvement																																
B. Accomplishments/Planned Program																																		
<table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"><tr><td style="width: 30%;"></td><td style="width: 15%;">FY 02</td><td style="width: 15%;">FY 03</td><td style="width: 15%;">FY 04</td><td style="width: 15%;">FY 05</td></tr><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">11.592</td><td style="text-align: center;">3.807</td><td style="text-align: center;">0.000</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></table> <div style="border: 1px solid black; height: 150px; margin-bottom: 10px;"></div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"><tr><td style="width: 30%;"></td><td style="width: 15%;">FY 02</td><td style="width: 15%;">FY 03</td><td style="width: 15%;">FY 04</td><td style="width: 15%;">FY 05</td></tr><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.000</td><td style="text-align: center;">2.013</td><td style="text-align: center;">1.749</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: 60px;"></div>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	11.592	3.807	0.000	0.000	RDT&E Articles Quantity						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	0.000	0.000	2.013	1.749	RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05																														
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RDT&E Articles Quantity																																		
	FY 02	FY 03	FY 04	FY 05																														
Accomplishments/Effort/Subtotal Cost	0.000	0.000	2.013	1.749																														
RDT&E Articles Quantity																																		

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C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	12.221	3.901	2.113	1.842
FY 2004 President's Budget	11.592	3.807	2.013	1.749
Total Adjustments	-0.629	-0.094	-0.100	-0.093
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.023		
Congressional rescissions	-0.026			
SBIR/STTR Transfer	-0.318			
Economic Assumptions	-0.033	-0.071	-0.064	-0.048
Reprogrammings	-0.252			
Congressional increases				
Other Navy/OSD Adjustments			-0.036	-0.045
Subtotal	-0.629	-0.094	-0.100	-0.093

Schedule:

MS III moved from 4Q03 to 1Q04 in order to resolve Contractor Testing anomalies. The Full Rate Production (FRP) contract award remains 2Q04.

Technical:

Not Applicable.

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D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
WPN BLI 203270, HARM MODS		4.863	7.787	8.000	8.196	8.403			0	37.249
Related RDT&E: Not applicable.										

E. ACQUISITION STRATEGY: *

The HARM Block IIIB/VI Upgrade program is an ACAT III Program and will consist of three separate phases (EMD, Production, and Technology Evaluation and Assessment). The acquisition strategy for the HARM Block IIIB/VI Program is complete and is based upon a signed international Memorandum of Agreement with Germany, Italy, and U.S. Navy; a tri-national Cooperative Operational Requirements Document (CORD) details German, Italian, and U.S. Navy common requirements; and a Cooperative Test and Evaluation Master Plan (CTEMP) summarizes all test requirements. These three documents drive the overall acquisition approach to the HARM Block VI project.

Management of the Block IIIB/VI upgrade will be directed by a trilateral Steering Committee, however, the U.S. Navy Project Manager (in concert with Project Managers from Germany and Italy) is responsible for Program execution. Each partner will share one-third of "common costs", the U.S. Navy will fund Block VI unique costs, and the German and Italian participants will fund Block IIIB unique costs. Each country will pay its own aircraft integration costs.

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-7			0205601N HARM Improvement			A1780 HARM Improvement						
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	C/CPIF	RSC, Tucson, AZ	18.249	0.793	10/02						19.042	19.042
Ancillary Hardware Development												
Aircraft Integration	WX	NAWC WD, China Lake, CA	9.746	1.038	10/02						10.784	
Ship Integration												
Ship Suitability												
Systems Engineering*	WX	NAWC WD, China Lake, CA	2.984	0.479	10/02	0.018	10/03	0.011	10/04		3.492	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			30.979	2.310		0.018		0.011		0.000	33.318	
Remarks: * In FY04/05, Germany and Italy will contribute to the Systems Engineering line.												
Development Support												
Software Development												
Integrated Logistics Support	WX	NAWC WD, Point Mugu, CA	1.209	0.573	10/02	0.199	10/03				1.981	
Configuration Management												
Technical Data												
Studies & Analyses		Boeing		0.030	01/03						0.030	
GFE												
Award Fees												
Subtotal Support			1.209	0.603		0.199		0.000		0.000	2.011	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-7			0205601N HARM Improvement			A1780 HARM Improvement						
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	WX	NAWC WD China Lake, CA	9.006								9.006	
Operational Test & Evaluation	WX	NAWC WD China Lake, CA	3.308								3.308	
Operational Test & Evaluation FME	WX	NAWC WD China Lake, CA		0.859	10/02	1.717	10/03	1.714	10/04	Continuing	Continuing	
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			12.314	0.859		1.717		1.714		Continuing	Continuing	
Remarks: German and Italian cost share contribution to DT/OT.												
Contractor Engineering Support	RX	Rockwell Collins	2.149	0.010	01/03	0.065	12/03	0.015	12/04		2.239	
Government Engineering Support												
Program Management Support												
Travel/Transportation	WX	NAWCAD, Pax River, MD	0.337	0.025	10/02	0.014	10/03	0.009	10/04	Continuing	Continuing	
SBIR Assessment												
Subtotal Management			2.486	0.035		0.079		0.024		Continuing	Continuing	
Remarks:												
Total Cost			46.988	3.807		2.013		1.749		Continuing	Continuing	
Remarks:												

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Exhibit R-3, Project Cost Analysis
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EXHIBIT R4, Schedule Profile																								DATE:									
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APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME								PROJECT NUMBER AND NAME													
RDT&E, N / BA-7												0205601N HARM Improvement								A1780 HARM Improvement													
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																																	
Development																																	
Testing CT&E Combined DT/OT Independent OT (OPEVAL)																																	

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Exhibit R-4a, Schedule Detail
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement				PROJECT NUMBER AND NAME A2185 Advanced Anti-Radiation Guided Missile (AARGM)			
COST (\$ in Millions)	FY 2002*	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost								
RDT&E Articles Qty	18.200	47.531	28.739	53.553	67.409	91.180	41.206	

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

*Congressional Add: \$14.7 million in FY 2002 for AARGM risk reduction efforts and producibility enhancements, less Congressional undistributed reductions.

The Advanced Anti-Radiation Guided Missile (AARGM) Project transitions a Phase III Small Business Innovative Research (SBIR) program to develop and demonstrate a multi-mode guidance section on a HARM airframe to System Development and Demonstration (SD&D) in FY03. The AARGM SD&D program is designed to integrate a Multi-mode (passive Anti-Radiation Homing (ARH)/active Millimeter Wave (MMW) Radar/Global Positioning system/Inertial Navigation System (GPS/INS)) on the HARM missile.

The issue of emitter "shut-down" as a defensive tactic has been a major shortcoming in the joint suppression of enemy air defenses (J-SEAD) element of the offensive counter air mission area for the United States Navy and Air Force. Program objectives are to achieve an effective and affordable lethal SEAD capability against mobile, relocatable, or fixed air defense threats even in the presence of emitter shutdown or other Anti-Radiation Missile (ARM) countermeasures. The multi-mode technology being integrated in the AARGM program resolves the problem of "shut-down".

The AARGM Advanced Technology Demonstration ATD technology demonstration program was an outgrowth of a Phase I and II competitive SBIR program. Phase I and II SBIR efforts successfully demonstrated the feasibility of a multi-mode seeker to address radar "shut-down" issues. Science and Applied Technology (SAT), Inc. was awarded Phase I and II contracts (FY90-93) and was subsequently selected for a Phase III demonstration in FY94. Phase III ATD work is being performed by STK (previously SAT) under NAVAIR contract N00019-94-C-0078. This contractual effort will result in a cumulative contract value of \$194.9M. The AARGM ATD completed in FY 2002; the AARGM Risk Reduction/Producibility Enhancement Effort will complete in FY03. AARGM will commence System Development and Demonstration (SD&D) in FY03. The AARGM program plans to produce 1,750 missiles (60 Low Rate Initial Production (LRIP) missiles and 1,690 Full Rate AGM-88Es).

The AARGM program is the vehicle for the Quick Bolt Advanced Concept Technology Demonstration (ACTD). Quick Bolt adds the ability to receive threat data from national assets, enlarging the target set and increasing aircrew situational awareness, and to transmit a Weapon Impact Assessment (WIA) message to assist in the critical area of Battle Damage Assessment (BDA). The Quick Bolt ACTD is planned for completion in FY 2003.

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B. Accomplishments/Planned Program				
	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	18.200	21.900		
RDT&E Articles Quantity				
Advanced Anti-Radiation Guided Missile (AARGM) Advanced Technology Demonstration (ATD) completion; Risk Reduction/Producibility Enhancement efforts for transitioning into SD&D.				
	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		11.712	28.739	53.553
RDT&E Articles Quantity				
Milestone B System Development and Demonstration (SD&D) activities, and post-Milestone B SD&D effort. Contractor to update the SD&D subsystem designs to the SD&D System Performance Specification and prepare for/conduct System Design Review, Preliminary Design Review, Critical Design Review, Contractor build-up and laboratory and field testing of the AGM-88E seeker. Field activities to support System Engineering, aircraft integration (including Software Configuration Set support), test asset, and test and evaluation requirements analysis, and developmental logistics support. Contractor to perform engineering and technical evaluation services to support program management of AARGM.				
	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		13.919		
RDT&E Articles Quantity				
Quick Bolt Advanced Concept Technology Demonstration (ACTD) contractor and governmental activities to demonstrate the utility of integrating off-board sensor cueing into a new HARM seeker and the utility of providing Weapon Impact Assessment data for BDA cueing. Contractor to support Military Utility Assessment activities including hardware in-the-loop testing, field testing, and missile live firings. Contractor to deliver residual ACTD assets.				

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APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement	PROJECT NUMBER AND NAME A2185 Advanced Anti-Radiation Guided Missile (AARGM)																																																																													
<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"></th> <th style="text-align: right;">FY 2002</th> <th style="text-align: right;">FY 2003</th> <th style="text-align: right;">FY 2004</th> <th style="text-align: right;">FY 2005</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Previous President's Budget:</td> <td style="text-align: right;">14.57</td> <td style="text-align: right;">48.710</td> <td style="text-align: right;">54.712</td> <td style="text-align: right;">69.416</td> </tr> <tr> <td>FY 2004 President's Budget</td> <td style="text-align: right;">18.200</td> <td style="text-align: right;">47.531</td> <td style="text-align: right;">28.739</td> <td style="text-align: right;">53.553</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right;">3.630</td> <td style="text-align: right;">-1.179</td> <td style="text-align: right;">-25.973</td> <td style="text-align: right;">-15.863</td> </tr> <tr> <td colspan="5" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td> Congressional program reductions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Congressional undistributed reductions</td> <td></td> <td style="text-align: right;">-0.288</td> <td></td> <td></td> </tr> <tr> <td> Congressional rescissions</td> <td style="text-align: right;">-0.031</td> <td></td> <td></td> <td></td> </tr> <tr> <td> SBIR/STTR Transfer</td> <td style="text-align: right;">-0.319</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Economic Assumptions</td> <td style="text-align: right;">-0.050</td> <td style="text-align: right;">-0.891</td> <td style="text-align: right;">-0.758</td> <td style="text-align: right;">-1.247</td> </tr> <tr> <td> Other Navy/OSD Adjustments</td> <td></td> <td></td> <td style="text-align: right;">-25.215</td> <td style="text-align: right;">-14.616</td> </tr> <tr> <td> Reprogrammings</td> <td style="text-align: right;">4.030</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Congressional increases</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">3.630</td> <td style="text-align: right; border-top: 1px solid black;">-1.179</td> <td style="text-align: right; border-top: 1px solid black;">-25.973</td> <td style="text-align: right; border-top: 1px solid black;">-15.863</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule:</p> <p style="margin-left: 20px;">AARGM Initial Operating Capability changed by two years, from FY08 to FY10.</p> <p style="margin-top: 40px;">Technical:</p>						FY 2002	FY 2003	FY 2004	FY 2005	Funding:					Previous President's Budget:	14.57	48.710	54.712	69.416	FY 2004 President's Budget	18.200	47.531	28.739	53.553	Total Adjustments	3.630	-1.179	-25.973	-15.863	Summary of Adjustments					Congressional program reductions					Congressional undistributed reductions		-0.288			Congressional rescissions	-0.031				SBIR/STTR Transfer	-0.319				Economic Assumptions	-0.050	-0.891	-0.758	-1.247	Other Navy/OSD Adjustments			-25.215	-14.616	Reprogrammings	4.030				Congressional increases					Subtotal	3.630	-1.179	-25.973	-15.863
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R-1 SHOPPING LIST - Item No. 179

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-7		PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement			PROJECT NUMBER AND NAME A2185 Advanced Anti-Radiation Guided Missile (AARGM)					
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>	To <u>Complete</u>	Total <u>Cost</u>
P-1 Proc. Line Item No. 232700, HARM MODS	0	0	0	0	0	0	24.818	42.425	600.757	668
 E. ACQUISITION STRATEGY:										
<p>The AARGM program started as a Phase I Small Business Innovative Research (SBIR), Advanced Technology Program (ATD), and has evolved into a Phase III SBIR program transitioning into System Development and Demonstration (SD&D). The AARGM SD&D fulfills U.S. Navy operational requirements and the SD&D incorporates AARGM system requirements. Government responsibilities for both the ATD and SD&D include monitoring, technical assessment and validation of contractor technology development and testing.</p> <p>The Quick Bolt Advanced Concept Technology Demonstration (ACTD) will be completed in FY03 and transitioned into the AARGM SD&D.</p>										

R-1 SHOPPING LIST - Item No. 179

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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-7			0205601N HARM Improvement			A2185 Advanced Anti-Radiation Guided Missile (AARGM)						
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	CPFF	SAT, Woodland Hills, CA	98.562	0.000		0.000		0.000		0.000	98.562	98.562
Primary Hardware Dev. - Risk Red.	CPFF	SAT, Woodland Hills, CA	52.305	14.000	11/02	0.000		0.000		0.000	66.305	66.305
Primary Hardware Dev. - Quick Bolt	CPFF	SAT, Woodland Hills, CA	4.700	12.634	10/02	0.000		0.000		0.000	17.334	17.334
Primary Hardware Dev. - SD&D	CPIF	ATK, San Diego, CA	0.000	3.931	05/03	23.500	12/03	42.900	12/04	127.769	198.100	198.100
Aircraft Integration	WX	NAWC WD, China Lake	0.122	2.238	10/02	0.488	10/03	0.022	10/04	0.015	2.885	
Systems Engineering	WX	NAWC WD, China Lake	15.611	4.200	10/02	2.831	10/03	4.654	10/04	37.792	65.088	
Systems Engineering	WX	JHU/APL, MD	0.615	0.000							0.615	
Primary Hardware Dev. - Risk Red.	CPFF	ATK, San Diego, CA	0.000	7.900	03/03							
Tooling												
GFE												
Award Fees												
Subtotal Product Development			171.915	44.903		26.819		47.576		165.576	456.789	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support	Var	Various		0.050	02/03	0.200	10/03	1.618	10/04	6.380	8.248	
Configuration Management												
Technical Data												
Studies & Analyses	Var	Various		0.027	10/02	0.027	10/03	0.028	10/04	0.090	0.172	
GFE												
Award Fees												
Subtotal Support			0.000	0.077		0.227		1.646		6.470	8.420	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-7			PROGRAM ELEMENT 0205601N HARM Improvement				PROJECT NUMBER AND NAME A2185 Advanced Anti-Radiation Guided Missile (AARGM)					
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	WX	NAWC WD, CHINA LAKE		1.200	10/02	0.893	10/03	2.481	10/04	13.633	18.207	
Operational Test & Evaluation	WX	NAWC WD, CHINA LAKE								7.709	7.709	
Live Fire Test & Evaluation												
Test Assets	WX	Assorted						0.750	10/04	2.250	3.000	
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	1.200		0.893		3.231		23.592	28.916	
Remarks:												
Contractor Engineering Support	RX	DCS Corp, Alexandria, VA	3.236	1.311	10/02	0.720	11/03	1.000	11/04	3.651	9.918	
Government Engineering Support												
Program Management Support												
Travel	WX	NAWC AD, Patuxend MD	0.375	0.040	10/02	0.080	10/03	0.100	10/04	0.507	1.102	
Transportation												
SBIR Assessment												
Subtotal Management			3.611	1.351		0.800		1.100		4.157	11.019	
Remarks:												
Total Cost			175.526	47.531		28.739		53.553		199.795	505.144	
Remarks:												

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 16 of 48)

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:								
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME				February 2003				
RDT&E, N / BA-7												0205601N HARM Improvement												A2185 Advanced Anti-Radiation Guided Missile (AARGM)								
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	1	2	3	4
Acquisition Milestones						MS B	△																		MS C	△						
Completion of AARGM ATD Completion of Quick Bolt ACTD			△			△																										
Development System Design Review Preliminary Design Review Critical Design Review Functional Configuration Audit Production Readiness Review							SDR	△						PDR	△				CDR	△							FCA	△	PRR	△		
Testing & Evaluation Milestones Development Testing (IIA) Operational Testing (IIA)																						△	△	△	△	△	△	△	△	△	△	
Production Milestones Contract Award (SD&D) Low-Rate Initial Production LRIP I Low-Rate Initial Production LRIP II							△	SD&D Contract Awd																			△	LRIP 1			△	LRIP II

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

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CLASSIFICATION:

[illegible]

R-1 SHOPPING LIST - Item No. 179

UNCLASSIFIED

Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 18 of 48)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement				PROJECT NUMBER AND NAME A2211 Common Missile*			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	1.224	7.950	13.904	59.614	33.090	36.436	37.466	24.993
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

*Previously referred to as JAWS/Modernized HELLFIRE

(U) Common Missile (CM): Army lead joint service program to replace the aging legacy TOW, Maverick, and Hellfire missiles with a single multi-role weapon, IAW approved Navy, Army and Marine Corps mission needs statement for future multi-role precision guided weapons. The Department of the Navy (DoN) has a Memorandum of Understanding (MOU) with the Army for participation in the development of the Common Missile. Common Missile will provide Line of Sight (LOS), Non-Line of Sight (NLOS), and Beyond Line of Sight (BLOS) capabilities including precision strike with Fire & Forget technologies, increased range, and increased lethality for both Fixed Wing and Rotary Wing Aircraft. Common Missile will maximize the Warfighter's operational flexibility by allowing them effectively engage a variety of stationary and mobile targets, including advanced armor, bunkers, buildings, command and control vehicles, transporter/erector launchers and patrol craft.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA - 7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement	PROJECT NUMBER AND NAME A2211 Common Missile		
B. Accomplishments/Planned Program				
	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.224	7.950	13.904	59.614
RDT&E Articles Quantity				
<p>Continued participation with the Army to in Common Missile System Development and Demonstration, to include:</p> <ul style="list-style-type: none">-Development of seeker, propulsion and Warhead technologies for Navy and Marine Corps Fixed and Rotary Wing peculiar requirements (including shipboard operability and suitability);-Systems engineering, including development of component technical solutions using SMART (simulation and modeling for acquisition, requirements and training).-Design reviews (Baseline Design Review, Preliminary Design Review, Critical Design Review);-Risk reduction engineering on multi-mode seekers (Dual/Tri-Mode), advanced warheads, and variable thrust propulsion;-Platform integration.				

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 20 of 48)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement	PROJECT NUMBER AND NAME A2211 Common Missile		

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	1.289	8.147	14.492	6.473
Current BES/President's Budget	1.224	7.950	13.904	59.614
Total Adjustments	-0.065	-0.197	-0.588	53.141
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.048		
Congressional rescissions	-0.003			
SBIR/STTR Transfer	-0.033			
Economic Assumptions	-0.003	-0.149	-0.321	-1.252
Reprogrammings	-0.026			
Congressional increases				
Other Navy/OSD Adjustments			-0.267	54.393
Subtotal	-0.065	-0.197	-0.588	53.141

Schedule:

Not Applicable.

Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 179

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Exhibit R-2a, RDTEEN Project Justification
(Exhibit R-2a, page 21 of 48)

UNCLASSIFIED

DATE: **February 2003**

R-1 SHOPPING LIST - Item No. 179

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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-7			0205601N HARM Improvement			A2211 Common 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	MIPR	AAMCOM, Huntsville, AL		1.870	11/02	4.459	11/03	5.628	11/04		11.957	
Ancillary Hardware Development	TBD	TBD (Contractor)				1.000	11/03	8.146	11/04		9.146	9.146
Training Development	WX	NAWCAD/WD				4.000	11/03				4.000	4.000
Aircraft Integration	WX	NAWCAD/WD		0.300	11/02	1.873	11/03	17.400	11/04		19.573	
Ship Suitability												
Systems Engineering	WX	NAWCAD/WD	1.238	3.230	10/02			1.915	10/04		6.383	
Licenses												
Tooling												
GFE												
Award Fees		TBD (Contractor)				0.476	11/03	2.022	11/04		2.498	
Subtotal Product Development				5.400		11.808		35.111			52.319	
Remarks:												
Development Support	WX	NAWCAD/WD	1.374			0.312	10/03	0.319	10/04		2.005	
Software Development												
Integrated Logistics Support												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			1.374			0.312		0.319			2.005	
Remarks:												

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 23 of 48)

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY RD&E, N / BA-7			PROGRAM ELEMENT 0205601N HARM Improvement			PROJECT NUMBER AND NAME A2211 Common 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
Developmental Test & Evaluation	WX	NAWCAD/WD	0.185	1.000	11/02			2.000	11/04		3.185	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets	MIPR	TBD (Contractor)						17.641	11/04		17.641	17.641
Tooling	MIPR/TDE	NACWD/Contractor		0.500	11/02						0.500	
GFE												
Award Fees												
Subtotal T&E			0.185	1.500		0.000		19.641		0.000	21.326	
Remarks:												
											0.000	3.653
Government Engineering Support	WX	NAWCAD/WD	1.912	0.500	01/03	0.468	01/04	0.479	11/04	Continuing	Continuing	
Program Management Support	Various	Various		0.500	Various	1.116	Various	3.864	11/04		5.480	
Travel	WX/MIPR	NAVAIR/AAMCOM, Huntsville, AL	0.125	0.050	10/02	0.200	01/04	0.200	10/04		0.575	
Transportation												
SBIR Assessment			0.039								0.039	
Subtotal Management			2.076	1.050		1.784		4.543		Continuing	Continuing	
Total Cost			3.635	7.950		13.904		59.614		Continuing	Continuing	

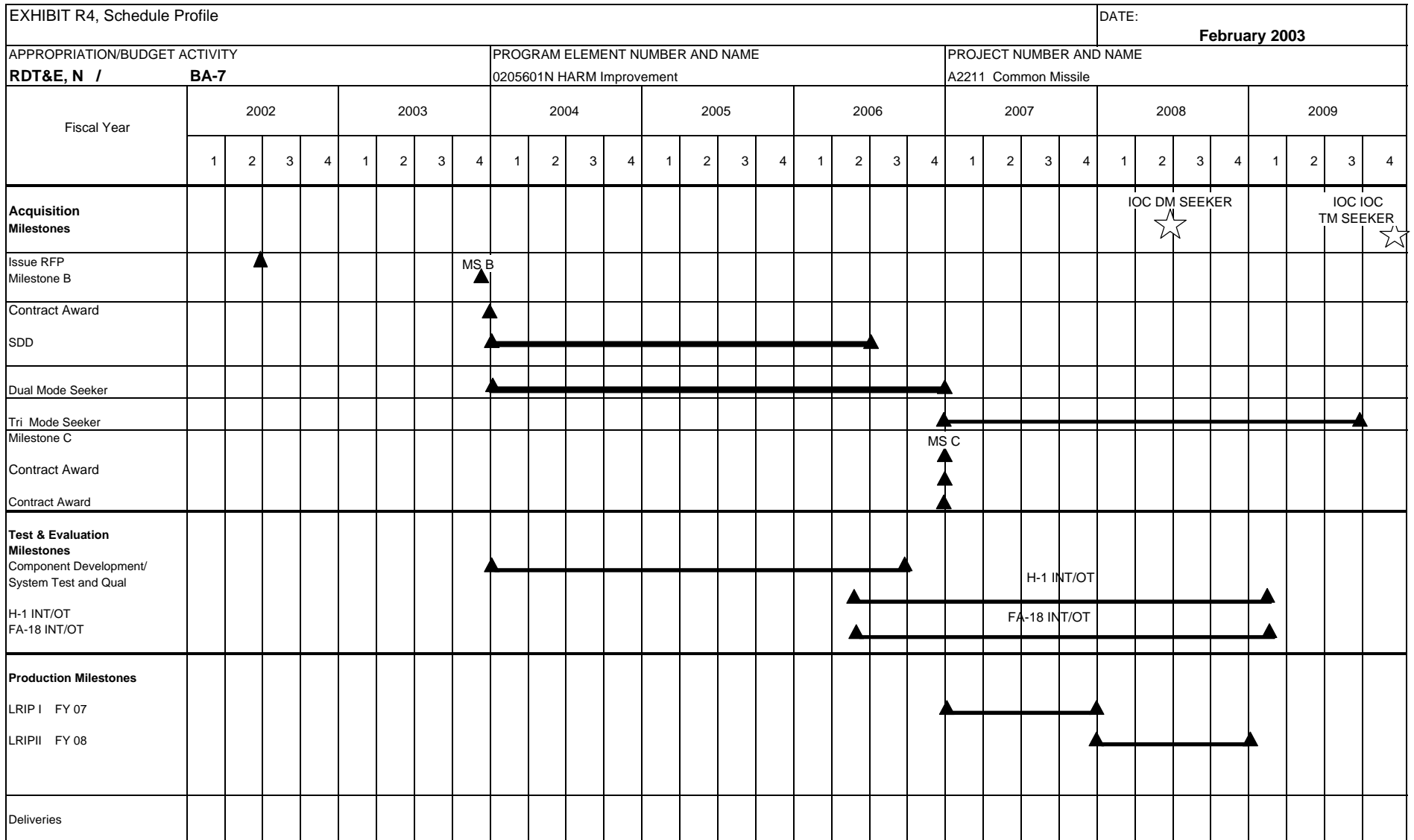
R-1 SHOPPING LIST - Item No. 179

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 24 of 48)

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CLASSIFICATION:



R-1 SHOPPING LIST - Item No. 179

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

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Exhibit R-4, Schedule Profile
(Exhibit R-4, page 25 of 48)

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CLASSIFICATION:

[illegible]

R-1 SHOPPING LIST - Item No. 179

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 26 of 48)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement				PROJECT NUMBER AND NAME A3056 Direct Attack Guided Rocket (DAGR)			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost			4.725	12.536	12.533			
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Army, Marine Corps, and recent Navy ASUW Mission Need Statements highlighted the requirement for a weapon system capable of employment from the SH-60 to counter a swarm threat of small attack boats. The DAGR is an Army ATD to develop a low cost Semi Active Laser (SAL) precision guidance section for existing 2.75 inch unguided rockets. DAGR will provide and inexpensive, small, lightweight, precision guided weapon that is effective against soft and lightly armored targets and which enhances crew survivability with increased stand-off range. DAGR offers precision, maximum stored kills per aircraft sortie, minimum collateral damage potential, and increased effectiveness over legacy unguided rockets. The guidance package can be assembled with existing unguided rocket components (warhead and rocket motor) and can be fired from existing rocket launchers.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA - 7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement	PROJECT NUMBER AND NAME A3056 Direct Attack Guided Rocket (DAGR)		
B. Accomplishments/Planned Program				
	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			4.725	12.536
RDT&E Articles Quantity				
<p>FY04 - 05 Direct Attack Guided Rocket (DAGR) funding supports the Navy participation and share in SD&D with the Army. This is an Army lead program. The program will develop, test and qualify a laser guided 2.75-inch munitions for the Navy and Marine Corps rotary wing and fixed wing aviation. Funding will ensure Navy requirements are contained in the System Development and Demonstration contract, Statement of Work and will participate in Source Selection Board activities. Participated with the Army to validate the Operational Requirements Document (ORD). Prepared for a Milestone B decision, System Development and Demonstration. FY04 component development, DT testing and technical analysis. FY05, 5" rocket design and development, development of OT targets and, procurement of OT guidance sections, OT technical analysis, Aircraft Integration studies.</p>				

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement	PROJECT NUMBER AND NAME A3056 Direct Attack Guided Rocket (DAGR)		

C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget:	0.000	0.000	4.875	12.907
Current BES/President's Budget	0.000	0.000	4.725	12.536
Total Adjustments	0.000	0.000	-0.150	-0.371
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions			-0.120	-0.279
Reprogrammings				
Congressional increases				
Other Navy/OSD Adjustments			-0.030	-0.092
Subtotal	0.000	0.000	-0.150	-0.371

Schedule:

Not Applicable.

Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 179

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Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 29 of 48)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7			PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement		PROJECT NUMBER AND NAME A3056 Direct Attack Guided Rocket (DAGR)		

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PANMC - Airborne Rockets, All Types *										
					3.5	7.0	10.5			
Related RDT&E: U. S. Army P.E. 0603313A PROJ D263 Future Missile Technology Insertion (FMTI). U.S. Army P.E. 0604329A Common Missile, U.S. Army P.E. 0604802A Advanced Precision Kill Weapon System.										
* Planned procurement strategy for the DAGR 2.75-inch guidance sections within the current Airborne Rockets, All Types PANMC funding profile										

E. ACQUISITION STRATEGY:

Not an ACAT program with no specific acquisition strategy.

R-1 SHOPPING LIST - Item No. 179

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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-7			0205601N HARM Improvement			A3056 DAGR (APKWS)						
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	TBD	TBD				0.505	10/03	2.357	10/04		2.862	2.862
Ancillary Hardware Development	TBD	TBD						0.054	10/04		0.054	0.054
Training Development	TBD	TBD						0.050	10/04		0.050	0.050
Aircraft Integration	TBD	TBD				0.200	10/03	0.100	11/04		0.300	
Ship Suitability												
Systems Engineering	TBD	TBD						0.544			0.544	
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development						0.705		3.105		0.000	3.810	
Remarks:												
Development Support	WX	NAWCAD/NAWCWD						0.050	10/04		0.050	
Software Development	WX	NAWCAD/NAWCWD						0.025	10/04		0.025	
Integrated Logistics Support	WX	NAWCAD/NAWCWD						0.180	10/04		0.180	
Configuration Management	WX	NAWCAD/NAWCWD						0.060	10/04		0.060	
Technical Data	WX	NAWCAD/NAWCWD						0.165	10/04		0.165	
Studies & Analyses	WX	NAWCAD/NAWCWD						0.385	10/04		0.385	
Contractor Engineering Support	WX	NAWCAD/WD						0.250	10/04	6.533	6.783	
Government Engineering Support	WX	NAWCAD/WD				0.755	10/03	1.850	10/04		2.605	
Subtotal Support								2.965			2.965	
Remarks:												

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 31 of 48)

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7			PROGRAM ELEMENT 0205601N HARM Improvement			PROJECT NUMBER AND NAME A3056 DAGR (APKWS)						
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	PX	NSWC Indian Head, MD				1.060	10/03				1.060	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets	TBD	Contractor/TBD				1.810	10/03	6.000	10/04	6.000	13.810	13.810
Tooling												
GFE												
Award Fees												
Subtotal T&E						2.870		6.000		6.000	14.870	
Remarks:												
Program Management Support	WX	NAWCAD/WD				0.329	10/03	0.400	10/04		0.729	
Travel						0.066	10/03	0.066	10/04		0.132	
Transportation												
SBIR Assessment												
Subtotal Management						0.395		0.466		0.000	0.861	
Remarks:												
Total Cost						3.970		12.536		6.000	22.506	
Remarks:												

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 32 of 48)

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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												0205601N HARM Improvement												A3056 Direct Attack Guided Rocket (DAGR)											
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 Milestone B Milestone C					▲									▲																					
SDD*					▲	System Development and Demonstration (SDD)												▲																	
SDD Contract Award*					▲																														
AH-1 INT/OT									▲							▲																			
Test & Evaluation Milestones Component Development/ System Test and Qual									▲							▲																			
										▲			▲																						
Operational Test															▲	▲																			
Production Milestones LRIP FRP FRP (Follow-on)																	▲			▲				▲			▲								
																								▲			▲								
Deliveries																																			

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* US Army SD&D activities begin in FY 2003; Navy participation begins in FY 2004

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Exhibit R-4, Schedule Profile
(Exhibit R-4, page 33 of 48)

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CLASSIFICATION:

[illegible]

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 34 of 48)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7		PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement			PROJECT NUMBER AND NAME A3057 Common Defense Weapons System			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost				4.838				
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Department of the Navy has a requirement to replace legacy M2M and XM-218 50 caliber machine guns with an advanced crew served weapon for assault and support helicopters. Specific applications will provide a significant increase in firepower, accuracy, lethality and reliability, and will maximize survivability through suppressive fire capabilities. Funding will support requirements validation, advance technology demonstration, and hardware development.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA - 7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement	PROJECT NUMBER AND NAME A3057 Common Defense Weapons System		
B. Accomplishments/Planned Program				
	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				4.838
RDT&E Articles Quantity				
<p>Funding will support requirements validation, advance technology demonstration, and hardware development, including integration and system qualification efforts on the H1/H46/H53 helicopters.</p>				

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement	PROJECT NUMBER AND NAME A3057 Common Defense Weapons System		

C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget:	0.000	0.000	0.000	4.964
Current BES/President's Budget	0.000	0.000	0.000	4.838
Total Adjustments	0.000	0.000	0.000	-0.126
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions				-0.117
Reprogrammings				
Congressional increases				
Other Navy/OSD Adjustments				-0.009
Subtotal	0.000	0.000	0.000	-0.126

Schedule:

Not Applicable.

Technical:

Not Applicable

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DATE:	February 2003
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D. OTHER PROGRAM FUNDING SUMMARY:

E. ACQUISITION STRATEGY:

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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-7			0205601N HARM Improvement			A3057 Common Defense Weapons System						
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	TBD	Contractor (TBD)/NAWCWD						2.000	10/04		2.000	
Ancillary Hardware Development												
Training Development	WX	NAVAIR						0.075	10/04		0.075	
Aircraft Integration	WX	NAWCAD/WD						1.283	10/04		1.283	
Ship Suitability												
Systems Engineering	WX	NAWCAD/NAWCWD						0.140	10/04		0.140	
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development								3.498			3.498	
Remarks:												
Development Support	WX	NAWCAD/NAWCWD						0.140	10/04		0.140	
Software Development												
Integrated Logistics Support	WX	NAWCWD						0.070	10/04		0.070	
Configuration Management	WX	NAWCWD						0.025	10/04		0.025	
Technical Data	WX	NAWCWD						0.025	10/04		0.025	
Studies & Analyses	WX	NAVAIR						0.075	10/04		0.075	
GFE												
Award Fees												
Subtotal Support								0.335			0.335	
Remarks:												

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 39 of 48)

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-7			0205601N HARM Improvement			A3057 Common Defense Weapons System						
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	WX	NAWCAD/WD						0.400	10/04		0.400	
Operational Test & Evaluation	WX	NAWCAD/WD						0.194	10/04		0.194	
Live Fire Test & Evaluation												
Test Assets								0.100	10/04		0.100	
Tooling												
GFE												
Award Fees												
Subtotal T&E								0.694			0.694	
Remarks:												
Contractor Engineering Support												
Government Engineering Support	TBD	TBD						0.145	10/04		0.145	
Program Management Support	TBD	TBD						0.146	10/04		0.146	
Travel	TBD	TBD						0.020	10/04		0.020	
Transportation												
SBIR Assessment												
Subtotal Management								0.311			0.311	
Remarks:												
Total Cost								4.838			4.838	
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												0205601N HARM Improvement												A3057 Common Defense Weapons System (CDWS)											
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																																			
Contract Award Advanced Technology Development & Hardware Development																																			
H-1/H-46/H-53 Integration																																			
Test & Evaluation Milestones																																			
System Qualification testing																																			

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

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[illegible]

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 42 of 48)

UNCLASSIFIED

CLASSIFICATION:

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement				PROJECT NUMBER AND NAME A9272 Low Cost High Temp Material			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost								
RDT&E Articles Qty		0.975						

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Congressional add for design and development of low cost, high temperature materials for radome and antenna use.

Funding will support the design and development of new radome candidate materials that are: (1) safe for production processing, (2) low cost in manufacturing, (3) structurally strong at high temperatures, and (4) compliant with RF transmission requirements compatible with Air-to-Ground Missile Hardware. This alternative radome capability will be developed to support AARGM, High-Speed Anti-Radiation (HSAD), and other follow-on AGM-88 configurations. Hardware configurations for testing effect of materials on radar transmissions will be developed.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement	PROJECT NUMBER AND NAME A9272 Low Cost High Temp Material																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"><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>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.975</td><td style="text-align: center;">0.000</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	Accomplishments/Effort/Subtotal Cost	0.000	0.975	0.000	0.000	RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.000	0.975	0.000	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 10px; min-height: 100px;"><p>Develop assorted, new radome candidate materials that are (1) safe for production processing, (2) low cost in manufacturing, (3) structurally strong at high temperatures, and (4) compliant with RF transmission requirements compatible with AARGM. Hardware configurations for testing will be developed. Candidate materials will be selected and screened for mechanical/physical properties and coating durability at high-temperatures. Final test will be performed to assess material and establish data points of radome transmission using candidate materials. NAWC WD field activity will provide eningeering analysis to assess low cost, high temperature materials design and development.</p></div>																			

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 44 of 48)

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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-7	0205601N HARM Improvement	A9272 Low Cost High Temp Material		
C. PROGRAM CHANGE SUMMARY:				
Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	0	0.000	0.000	0.000
FY 2004 President's Budget	0.000	0.975	0.000	0.000
Total Adjustments	0.000	0.975	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.006		
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions		-0.019		
Other Navy/OSD Adjustments				
Reprogrammings				
Congressional increases		1.000		
Subtotal	0.000	0.975	0.000	0.000
Schedule:				
Technical:				

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Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 45 of 48)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-7			PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement			PROJECT NUMBER AND NAME A9272 Low Cost High Temp Material			

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>
<p>E. ACQUISITION STRATEGY:</p> <p>Stand alone one-year effort for the design and development of low cost, high temperature materials for radome and antenna application will be conducted in FY2003. The program will be executed on an existing Naval Air Warfare Center BOA with Composite Optics, Inc., San Diego CA, and the funds will be obligated by Mar 2003. This contractual effort will develop assorted, new radome candidate material systems that are (1) safe for production processing, (2) low cost in manufacturing, (3) structurally strong at high temperatures, and (4) compliant with RF transmission requirements compatible with AARGM. Hardware configurations for testing will be developed. Candidate materials will be selected and screened for mechanical/physical properties and coating durability at high-temperatures. Final test will be performed to establish data points of radome transmission using candidate materials.</p>										

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CLASSIFICATION:

[illegible]

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-7			0205601N HARM Improvement			A9272 Low Cost High Temp Material						
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												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel				0.010	02/03						0.010	
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.010		0.000		0.000		0.000	0.010	
Remarks:												
Total Cost			0.000	0.975		0.000		0.000		0.000	0.975	
Remarks:												

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 48 of 48)