CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification										DATE: **June 2001**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7**						R-1 ITEM NOMENCLATURE 0205601N HARM Improvement					
COST ($ in Millions)	Prior Year Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Total PE Cost	**0.000**	**36.773**	**39.409**	**13.630**							
A1780* HARM Improvement	**0.000**	**10.713**	**9.368**	**12.330**							
A2185* Advanced Anti-Radiation Guided Missile (AARGM)	*** **109.475**	**** **24.959**	***** **27.717**	**0.000**							
A2211* Modernized Hellfire**	**0.000**	**1.101**	****** **2.324**	**1.300**							
Quantity of RDT&E Articles **Not Applicable**											

*Funding for FY00 was executed under Project Units E1780, E2185, E2661 (Congressional Add) and E2211. Project Units A1780, A2185, A2661 (Congressional Add), A2983 (Congressional Add), and A2211 will be effective beginning FY01 due to realignment from PEO(T) to PEO(W).
**Funding for FY00 was executed under Joint Advanced Weapons Systems (JAWS) RDT&E line.
***Prior years funding was executed under project units E2185 and W2185.
****The FY00 budget reflects a $15M Congressional Add for AARGM executed under E2661, which has been revised by $.452M for Congressional undistributed reductions.
*****The FY01 budget reflects a $20M Congressional Add for AARGM executed under A2661 ($15M for AARGM) and A2983 ($5M for QuickBolt)
******$294k has been identified as a reprogramming source for other high priority Navy requirements.
(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) A1780/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.

(U) A2185/ADVANCED ANTI-RADIATION GUIDED MISSILE (AARGM) and A2661/AARGM (Congressional Add): AARGM is a Phase III Small Business Innovative Research (SBIR) program designed to demonstrate an advanced multi-mode seeker on an existing High speed Anti-Radiation Missile (HARM) airframe. A2983/QuickBolt (QB) is an advanced concept technology demonstration of Joint-suppression of Enemy Air Defense (J-SEAD) technology enhancements applicable to AARGM. For ease of tracking, Project Units W2661, E2661, A2661, and A2983 ar e included in the A2185 funding profile.

(U) A2211/MODERNIZED HELLFIRE: Modernized Hellfire (MH) is the joint service program to support approved Army and USMC Mission Need Statements for future multi-role precision guided weapons. To fulfill these needs, the DON is participating with the Army in joint trade studies, requirements validation analysis, Advanced Technology Demonstration programs, hardware development, Analysis of Alternatives (AOA), and the development of Milestone support documentation. Specific potential applications include development of a single multi-role weapon to replace the legacy TOW, Maverick, and Hellfire missiles, as well as development of a low cost guidance capability for the legacy unguided 2.75" rocket system.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

R-1 SHOPPING LIST - Item No. 188

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **June 2001**			
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)	Prior Year Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	**0.000**	**10.713***	**9.368**	**12.328**							
RDT&E Articles Qty											

*Funding for FY00 was executed under Project Unit E1780. PU A1780 will be effective beginning FY01 due to realignment from PEO(T) to PEO(W).

(U) 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 as Engineering Change Proposals (ECPs). Another ECP software program (Block 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 V software was distributed to the Fleet in FY00.

The International HARM Upgrade Program (IHUP) 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.

1. FY 2000 ACCOMPLISHMENTS:

(U) ($7.100) Continued design/development of Inertial Measurement sub-systems and development of hardware and software associated with Block IIIB/VI. Continued development of Block VI USN unique software sub-routines.

(U) ($.059) Continued Engineering and Project Management Services in support of the HARM Upgrade Program (Block IIIB/VI) contract.

(U) ($.866) Continued Government engineering support of the HARM Upgrade Program (Block IIIB/VI) including preparation for Critical Design Review of Block VI software/hardware design. Effort includes further engineering studies, threat analysis, 6 Degrees of Freedom (DOF) analysis, documentation analysis, interface definition, precision navigation engineering, and software quality evaluation.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **June 2001**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME **0205601N HARM Improvement**	PROJECT NUMBER AND NAME **A1780 HARM Improvement**

2. FY2001 PLAN:

(U) ($5.266) Continue design/development of Inertial Measurement sub-systems and development of hardware and software associated with Block IIIB/VI. Continue development of Block VI USN unique software sub-routines.

(U) ($.256) Continue Engineering and Project Management Services in support of the HARM Upgrade Program (Block IIIB/VI) contract.

(U) ($1.027) Continue Government engineering support of the HARM Upgrade Program (Block IIIB/VI) including preparation for Critical Design Review of Block VI software/hardware design. Effort includes further engineering studies, threat analysis, 6 Degrees of Freedom (DOF) analysis, documentation analysis, interface definition, precision navigation engineering, and software quality evaluation.

(U) ($.145) Continue Government support of contractor testing including evaluation of test plans, reports, and preparation of detailed test planning documentation, and captive flight testing. Coordinate/attend/chair the Joint Test Plan Working Group and coordinate necessary program activities in support of future year Development Test/Operational Test (DT/OT).

(U) ($.176) Continue Government logistic support including logistics support analyses, maintenance engineering, support equipment engineering, and evaluating contractor designs.

(U) ($2.190) Continue Government and contractor participation in integration efforts. Continue developing the aircraft avionics updates required by the HARM Upgrade Program (Block VI) in addition to Command Launch Computer (CLC)/TAMPS upgrade efforts. Continue to develop HARM TAMPS/Mission Planning Module (MPM) rehost.

(U) ($0.308) Portion of extramural program reserved for Small Business Innovative Research assessment in accordance with 15 USC 68.

3. FY 2002 PLAN:

(U) ($3.003) Continue design/development of Inertial Measurement sub-systems and development of hardware and software associated with Block IIIB/VI. Continue development of Block VI USN unique software sub-routines.

CLASSIFICATION: **Unclassified**

EXHIBIT R-2a, RDT&E Project Justification		DATE: **June 2001**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	**0205601N HARM Improvement**	**A1780 HARM Improvement**

(U) B. PROGRAM CHANGE SUMMARY:

	FY2000	FY2001	FY2002
(U) FY 2001 President's Budget:	11.260	9.469	5.057
(U) Adjustments from the President's Budget:	-0.547	-0.101	7.273
(U) FY 2002/2003 President's Budget Submit:	10.713	9.368	12.330

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 2000 net decrease of $.547 million reflects a decrease of $.226 million for repriorization of requirements within the Navy, a decrease of $.277 million for Small Business Innovative Research assessment, and a decrease of $.044 million for a Congressional Recission.
The FY 2001 net decrease of $.101 million reflects a decrease of $.014 million for reprioritization of requirements within the Navy, a decrease of $.066 million for a Congressional Reduction, and a .021 million decrease for a Congressional Recission.
The FY 2002 net increase of $7.273 million reflects a decrease of $.051 million for reprioritization of requirements within the Navy, an increase of $7.300 million for HARM IHUP EMD Integration, and an increase of $.022 million for economic assumptions.

(U) Schedule: One quarter slip in the Flight Test Readiness Review (FTRR) from 4Q/2001 to 1Q/2002 reflects an administrative refinement of schedule.
The original FTRR date of 30 Sep 00 is now mid-Oct 01.

(U) Technical: Not applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2000	FY 2001	FY 2002
WPN BLI 232700, HARM MODS	89.058	0	0

Related RDT&E: Not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **June 2001**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	**0205601N HARM Improvement**	**A1780 HARM Improvement**

(U) D. 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 the 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.

The acquisition strategy delineates Industry and Government responsibilities. The contract strategy (i.e. hardware and software for missile, upgraded missile sections, contractor team responsibility for missile performance) assigns unique work tasks to each firm. Contract strategy is to issue contracts to Bodenseewerk Geratetechnik GmbH (BGT) (German), Alenia Marconi System (AMS) (Italian), and Raytheon Missile Systems (RMS) (U.S.) firms and will maximize use of commercial-off-the-shelf (COTS)/government-off-the-shelf (GOTS)/non-development items (NDI). Each Phase I (EMD) contract type and structure is tailored to the product of each firm.

(U) E. SCHEDULE PROFILE:

	FY 2000	FY 2001	FY 2002
(U) Program Milestones			
(U) Engineering Milestones	PDR (1Q/00)	CDR(1Q/01)	FTRR(1Q/02)
(U) T&E Milestones		Combined DT/OT (Start 4Q/01)	Combined DT/OT (End 2Q/02)
(U) Contract Milestones			

* BGT and AMS Contracts are not funded with U.S. funds, but are significant milestones in the Block IIIB/VI contract schedule.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: **June 2001**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0205601N HARM Improvement				PROJECT NUMBER AND NAME **A1780 HARM Improvement**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Block IIIB/VI Development	C/CPIF	RSC, Tuc AZ - BGT, GE		5.266	11/00	5.536	11/01					
Block VI Development	WX	NAWC WD, China Lake, CA		1.027	10/00	0.595	10/01					
Block VI ILS	WX	NAWC WD, Point Mugu, Ca		0.176	10/00	0.891	10/01					
Subtotal Product Development			0.000	6.469		7.022						
Remarks:												
SBIR Assessment				0.308								
Subtotal Support			0.000	0.308		0.000						
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)											DATE: **June 2001**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0205601N HARM Improvement				PROJECT NUMBER AND NAME **A1780 HARM Improvement**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Block IIIB/VI	WX	NAWC WD, China Lake, CA		0.145	10/00	0.779	10/01					
HARM Technical/Integration Studies	WX	NAWC WD, China Lake, CA		2.190	10/00	4.317	10/01					
Subtotal T&E			0.000	2.335		5.096						
Remarks:												
Block VI Travel	WX	NAWCAD, Patuxent, MD		0.087	10/00	0.052	10/01					
Block VI Tech Assess/Mgmt Sup	RX	DCS, Norfolk VA		0.169	02/01	0.160	12/01					
Subtotal Management			0.000	0.256		0.212						
Remarks:												
Total Cost			0.000	9.368		12.330						
Remarks:												

R-1 SHOPPING LIST - Item No. 188

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **June 2001**			
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)	Prior Year Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	** **109.475**	*** **24.959**	**** **27.717**	**0.000**							
RDT&E Articles Qty											

*Funding for FY00 was executed under Project Unit E2185/E2661 for Congressional Add.
**Prior years' funding was executed under project units E2185, W2185 and W2661 for Congressional Add.
***The FY00 budget reflects a $15M Congressional Add for AARGM executed under E2661, which has been revised by $.452M for Congressional undistributed reductions.
****The FY01 budget reflects a $20M Congressional Add for AARGM executed under A2661 ($15M for AARGM) and A2983 ($5M for QuickBolt)

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

The Advanced Anti-Radiation Guided Missile (AARGM) Project is a Phase III Small Business Innovative Research (SBIR) program to develop and demonstrate a multi-mode guidance section on a HARM airframe. The AARGM Phase III technology demonstration program is designed to demonstrate that a Multi-mode (passive Anti-Radiation Homing (ARH)/active Millimeter Wave (MMW) Radar/Global Positioning system/Inertial Navigation System (GPS/INS)) missile can engage and destroy enemy air defenses in the event that these systems "shut-down" or employ other countermeasures.

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 demonstrate 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 developed in the AARGM program has very high potential to solve the problem of "shut-down" not only in the primary weapon for J-SEAD, the High Speed Anti-Radiation Missile (HARM), but it could be integrated with many other missile airframes.

The AARGM technology demonstration program is 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. (San Diego, CA), was awarded Phase I and II contracts (FY90-93) and was subsequently selected for a Phase III demonstration in FY94. Phase III work is being performed by SAT under NAVAIR contract N00019-94-C-0078. This contractual effort will continue to be incrementally funded, under program element 0205601N, resulting in a cumulative contract value of $150.4M.

From FY93 through FY98, the AARGM program was a Congressionally mandated program which received its funding as an annual Congressional add. Starting in FY99, AARGM received its program funding through the standard DoD budget appropriation process. The FY99 funds added by Congress are being used to perform risk reduction tasks in preparation for a potential Milestone B (II) Decision in FY 2003. Additionally, in FY00 the AARGM program was selected as the vehicle for the Quick Bolt Advanced Concept Technology Demonstration (ACTD). This ACTD is planned for execution from FY00 through FY03.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **June 2001**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	**0205601N HARM Improvement**	**A2185 Advanced Anti-Radiation Guided Missile (AARGM)**

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 2000 ACCOMPLISHMENTS:

(U) ($5.890) Contractor conducted chamber tests of the software evaluation station/brassboard. Contractor continued unique AARGM design and commenced captive flight test preparation. Contractor completed Control Test Vehicle integration, testing, and test analysis. Contractor finalized development of AARGM prototype, including hardware/software design upgrades, subsystems assembly and test, prototype integration and testing, and prototype captive carry test. Contractor completed Control Test Vehicle (CTV) flights 1 and 2.

(U) ($3.287) Field activity provided AARGM system engineering support of development and systems integration efforts. Continued weapon system testing studies to assess weapons technology performance and deficiencies.

(U) ($.739) Contractor performed program management and engineering services in support of the AARGM technology demonstration program. Provided technical management support and coordination of AARGM Program weapons system technology studies.

(U) ($.043) Continued Government technical management, engineering support, and coordination of AARGM Program weapons system technology development program.

(U) ($15.000) Contractor continued risk reduction, producibility enhancements, and Quick Bolt Advanced Concept Technology Demonstration (ACTD) acitivities. Activities include performance and affordability enhancements of the Anti-Radiation Homing (ARH) receiver, the MillimeterWave (MMW) Radar Transceiver, the AARGM battery, and the Low-Band Antenna Array Receiver. Related efforts include radome material trade studies, aircraft integration studies, tactical software enhancements, and tactical sensitivity and Electro-Magnetic Interference (EMI) enhancements.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: **June 2001**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	**0205601N HARM Improvement**	**A2185 Advanced Anti-Radiation Guided Missile (AARGM)**

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

2. FY 2001 PLAN:

(U) ($3,358) Contractor to complete captive flight testing of the AARGM brassboard. Contractor to complete development of AARGM prototype Guided Test Vehicle, to include hardware/software design upgrades, subsystems assembly and test, prototype integration and testing, and prototype captive carry test and data analysis.

(U) ($3,469) Field activity to complete AARGM system engineering support of development and systems integration efforts. Complete weapon system testing studies to assess weapons technology performance and deficiencies.

(U) ($.703) Contractor to perform program management and engineering services in support of the AARGM technology demonstration program. Provide technical management support and coordination of AARGM Program weapons system technology studies

(U) ($14,371) Contractor continued risk reduction and producibility enhancements acitivities including performance and affordability enhancements of the Anti-Radiation Homing (ARH) receiver, the MillimeterWave (MMW) Radar Transceiver, the AARGM battery, and the Low-Band Antenna Array Receiver. Related efforts include radome material trade studies, aircraft integration studies, tactical software enhancements, and tactical sensitivity and Electro-Magnetic Interference (EMI) enhancements .

(U) ($4,790) Contractor commenced Quick Bolt Advanced Concept Technology Demonstration (ACTD) acitivities 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.

(U) ($.080) Complete Government technical management, engineering support, and coordination of AARGM Program weapons system technology development program.

(U) ($.946) Portion of extramural program reserved for Small Business Innovative Research assessment in accordance with 15 USC 68.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **June 2001**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	**0205601N HARM Improvement**	**A2185 Advanced Anti-Radiation Guided Missile (AARGM)**

(U) B. PROGRAM CHANGE SUMMARY:

	FY2000	FY2001	FY2002
(U) FY 2001 President's Budget:	25.700	8.979	0
(U) Adjustments from the President's Budget:	-0.741	18.738	0
(U) FY 2002 President's Budget Submit:	24.959	27.717	0

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 2000 net decrease of $.741million reflects a $.641 million reprioritization of requirements within the Navy and a $.100 million decrease for a Congressional recission. The FY 2001 net increase of $18.738 million reflects a $15.000 million Congressional add for Advanced Anti-Radiation Guided Missile risk reduction and producibility enhancements; to be executed under A2661; a $5.000 million Congressional add for the QuickBolt Advanced Concept Technology Demonstration (ACTD) to be executed under A2983, offset by a decrease of $.996 million for a reprioritization of requirements within the Navy; a $.202 million decrease for Congressional reduction, and a $.064K decrease for a Congressional Recission.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY: Not applicable.
Related RDT&E: Not applicable.

(U) D. ACQUISITION STRATEGY:

The HARM AARGM program is an advanced technology demonstration program. AARGM started as a Phase I Small Business Innovative Research (SBIR) program and has evolved into a Phase III SBIR program. The acquisition strategy for the AARGM Program is based upon U.S. Navy operational requirements; the AARGM program is driven by the conclusion derived from an Analysis of Alternatives for advanced Suppression of Enemy Air Defenses (SEAD) technology. Current acquisition strategy is consistent with the FY98 independent program review forwarded to Congress by SECNAV and the FY99 Authorization Report. The innovative research AARGM demonstration is fully funded and executable and will result in fabrication of research articles and limited flight testing of the AARGM multi-mode seeker with moderate risk. The U.S. Navy Project Manager is responsible for Program management and execution. AARGM's acquisition strategy delineates Industry and Government responsibilities. The contract strategy (i.e. software evaluation, control test vehicle development and testing, guided test vehicle development and testing) assigns work package tasks to a primary contractor, Science and Applied Technology (SAT) Corp. The SAT contract is funded on an incremental basis with work scope defined in contract options and contract modification statements of work. Government responsibilities include monitoring, technical assessment and validation of contractor technology development. The AARGM technology demonstration is expected to be completed by the 4th qtr of FY01. In FY00, the AARGM Project pursued enhanced system capabilities including AARGM producibility improvements as well as a Quick Bolt Advanced Concept Technology Development (ACTD) Initiative. Enhancements will effect major AARGM subsystems and interfaces as well as software and hardware.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: June 2001
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	**0205601N HARM Improvement**	**A2185 Advanced Anti-Radiation Guided Missile (AARGM)**

(U) E. SCHEDULE PROFILE

The AARGM program is an Advanced Technology Program and therefore does not have a standard detailed Milestone Plan. A list of key actions appears below.

AARGM PROGRAM	FY 2000	FY 2001	FY2002	To Complete
Software Evaluation Station/Brassboard				
Hardware/Software Development	Complete 1Q/00			
Chamber Tests	Complete 1Q/00			
Brassboard Captive Flight Tests (CFTs)				
Unique Design and CFT Preparation	Complete 1Q/00			
Contractor Managed Testing	Complete 1Q/00			
Captive Flight Testing	Begin 3Q/00	Complete 3Q/01		
Control Test Vehicles (CTVs)				
Integration and Test	Complete 2Q/00			
CTV Flights Test and Anaysis	Complete 3Q/00			
Prototype of Guided Test Vehicles (GTVs)				
Hardware/Software Design Upgrades	Complete 1Q/00			
Subsystems Assembly and Test	Complete 1Q/00			
Integration and Testing	Complete 4Q/00			
Captive and Carry Test	4Q/00			
Guided Test Vehicles (GTVs)				
Hardware/Software Design Upgrades	Continue	Complete 3Q/01		
Subsystems Assembly and Test	Continue	Complete 3Q/01		
Integration and Test	Begin 1Q/00	Complete 4Q/01		
GTV Live Fire Test and Analysis		4Q/01		
Contractor Design and Trade Studies	4Q/00	4Q/01		

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Exhibit R-3 Cost Analysis (page 1)										DATE: **June 2001**		
APPROPRIATION/BUDGET ACTIVITY **RDT&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 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Adv Tech Dev and Risk Reduction	CPFF	SAT, Woodland Hills, CA	95.214	3.358	12/00							
Engineering Support	WX	NAWC WD, China Lake, CA	12.152	3.469	10/00							
Engineering/Tech Assessment	CPIF	JHU/APL, MD	0.615									
Risk Reduction	CPFF	SAT, Woodland Hills, CA	23.805	14.371	04/01							
Quick Bolt	CPFF	SAT, Woodland Hills, CA	0.000	4.790	07/01							
Subtotal Product Development			131.786	25.988		0.000						
Remarks:												
SBIR Assessment				0.946								
Subtotal Support			0.000	0.946		0.000						
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)							DATE: **June 2001**				
APPROPRIATION/BUDGET ACTIVITY **RDT&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 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Subtotal T&E			0.000	0.000		0.000						
Remarks:												
Travel	WX	NAWCAD, Patuxent, MD	0.280	0.080	10/00							
Technical Assessment/Mgmt Supp	RX/LOE	DCS Alexandria, VA	2.468	0.703	12/00							
Subtotal Management			2.748	0.783		0.000						
Remarks:												
Total Cost			134.534	27.717		0.000						
Remarks:												

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **June 2001**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0205601N HARM Improvement					PROJECT NUMBER AND NAME A2211 MODERNIZED HELLFIRE*					
COST ($ in Millions)	Prior Year Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	**0.000**	**1.101**	**2.324****	**1.300**							
RDT&E Articles Qty											

*Funding for FY00 was executed under Project Unit E2211 and the Joint Advanced Weapons Systems (JAWS) RDT&E line. PU A2211 will be effective beginning FY01 due to the realignment from PEO(T) to PEO(W)
**$294K has been identified as a reprogramming source for other high priority Navy requirements.

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

Modernized Hellfire (MH) is the joint service program to support approved Army and USMC Mission Need Statements for future multi-role precision guided weapons. DON efforts support joint trade studies, requirements validation analysis, Advanced Technology Demonstration programs, hardware development, AOAs, and the development of Milestone support documentation. Through Memorandums of Understanding, the Army is assigned as the lead service for these follow-on weapon efforts, and service responsibilities are established for the Concept Exploration phase. The DON participates in technology modeling and simulation efforts at the Army's Advanced Prototyping, Engineering, and eXperimentation (APEX) Laboratory. The APEX Lab supports requirements validation and hardware development efforts to explore weapon system component capabilities. As a simulator, the APEX Lab also allows operator input using mission-oriented Tactics, Techniques and Procedures to prove-out proposed capabilities and to validate desired requirements. All MH efforts support the DON's requirements for state-of-the-art weapon capabilities to complement the next generation of aircraft and to best defeat the threats of the post-2000 battlefield.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 2000 ACCOMPLISHMENTS:

-(U) ($1.101) Expanded APEX evaluation of Military Operations in Urban Terrain (MOUT), as well as incorporation of fixed wing parameters into the APEX model. Continued flight modeling evaluations of the Advanced Precision Kill Weapon System (APKWS) guided rocket system for the unguided 2.75" rocket. Evaluated potential hardware component technical solutions. Performed initial validation of proposed requirements for the MH and APKWS. ($.850 Army and $.251 government in-house)

2. FY 2001 PLAN:

-(U) (**$1.937) Initiate formal validation of proposed requirements for the MH. Effort to include rotary and fixed wing evaluation using Man-in-the-Loop modeling and simulation facilities at the APEX Lab and at NAWC-WD. Effort will establish requirements for the draft NH Joint ORD. Participate with the Army in their studies related to the Joint Common Missile (JCM). Evaluate potential component technical solutions for future weapons via joint modeling and hardware development efforts. ($.924 Army and $1.860 government in-house).
-(U) ($0.093) Portion of extramural program reserved for Small Business Innovative Research assessment in accordance with 15 USC 68.

3. FY 2002 PLAN:

-(U) ($1.300) Initiate the formal AOA to recommend a material solution to satisfy the MNS for MH. Evaluate potential component technical solutions for future weapons via joint modeling and hardware development efforts. Participate with the Army in their studies related to the JCM. Participate with the Army on development, integration, and testing efforts for the APKWS. ($.085 Army and $1.215 government in-house).

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EXHIBIT R-2a, RDT&E Project Justification		DATE: **June 2001**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	**0205601N HARM Improvement**	**A2211 MODERNIZED HELLFIRE**

(U) B. PROGRAM CHANGE SUMMARY:

	FY2000	FY2001	FY2002
(U) FY 2001 President's Budget:	1.467	2.907	3.819
(U) Adjustments from the President's Budget:	-0.366	-0.583	-2.519
(U) FY 2002 President's Budget Submit:	1.101	2.324	1.300

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 2000 net decrease of $.366 million reflects a $.324 million decrease for repriorization of requirements within the Navy, a decrease of $.036 million for a Small Business Innovative Research (SBIR) Assessment, and a decrease of $.006 for a Congressional recission.
The FY 2001 net decrease of $.583 million is due to a 1415-1 Prior Approval Reprogramming Action for Single Integrated Air Picture (-$533K) and Congressional reductions ($30K)
The FY 2002 net decrease of $2.519 million reflects an increase of $1.993 million to begin the Program Definition Risk Reduction (PDRR) Phase, a decrease of $.014 million for reprioritization of requirments within the Navy, a decrease of $4.500 for a Congressional reduction, and an increase of $.002 for economic assumptions.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY:
Related RDT&E: U. S. Army P.E. 0603313A PROJ D263 Future Missile Technology Insertion (FMTI).

(U) D. ACQUISITION STRATEGY: Not an ACAT program with no specific acquisition strategy.

(U) E. SCHEDULE PROFILE: Not applicable.
Related RDT&E: U. S. Army P.E. 0603313A PROJ D263 Future Missile Technology Insertion (FMTI).

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)							DATE: **June 2001**					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			PROGRAM ELEMENT 0205601N HARM Improvement			PROJECT NUMBER AND NAME A2211 Modernized Hellfire						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date			Cost to Complete	Total Cost	Target Value of Contract
APEX Lab	MIPR	AAMCOM, Huntsville, AL	0.000	0.485	12/00	0.085	12/01					
Tech evaluation & Development	MIPR	TRADOC Norfolk, VA	0.000	0.185	12/00							
Subtotal Product Development			0.000	0.670		0.085						
Remarks:												
Engineering Technical Services	C/TMM	DCS Corp, Alexandria VA	0.000	0.215	01/01	0.160	01/02					
Engineering Technical Services	C/TMM	Whitney, Bradley and Brown	0.000	0.363	01/01	0.240						
Subtotal Support			0.000	0.578		0.400						
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)							DATE: **June 2001**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0205601N			PROJECT NUMBER AND NAME A2211 Modernized Hellfire						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Testing	WX	NAWC WD, China Lake, CA	0.000	0.607	11/00	0.772	11/01					
SBIR Assessment				0.093								
Subtotal T&E			0.000	0.700		0.772						
Remarks:												
Travel	WX	NAWC AD, Patuxent River	0.000	0.072	11/00	0.033	11/01					
Travel	MIPR	AAMCOM, Huntsville, AL	0.000	0.010	11/00	0.010	11/01					
Subtotal Management			0.000	0.082		0.043						
Remarks:												
Total Cost			0.000	2.030		1.300						
Remarks:												

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