

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4					R-1 ITEM NOMENCLATURE 0603609N/Conventional Munitions			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	23.484	17.988	42.539	43.461	43.866	33.122	33.493	33.906
K1821/Conventional Fuzed Warhead Package	17.355	13.390	13.713	14.580	14.994	18.553	18.848	19.176
32299/Non-Nuclear Expendable Ordnance	0.897	0.916	25.773	25.778	25.782	10.930	10.941	10.957
S0363/Insensitive Munitions Advanced Development	2.766	3.682	3.053	3.103	3.090	3.639	3.704	3.773
S2611/Env. Safe Energetic Materials	2.466	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Defense Emergency Response Funds (DERF) Funds: Not Applicable

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Conventional Fuzed Warhead Package (Project K1821/U1821): The Navy requires improved lethality of air and surface launched ordnance to defeat advanced threats. This is the only Navy 6.3B RDT&E program that addresses improvements in warhead and fuze technology to meet this requirement. This program is a significant vehicle for orderly planning, and timely and effective transition of Navy 6.2 and 6.3A investments to Engineering and Manufacturing Development (E&MD) phase missile/weapon systems. This program addresses increased lethality against current and emerging threats, and is responsive to all mission areas -- anti-air, strike, defense suppression, theater defense and ship defense -- and supports development of complete ordnance sections. The current on-going projects address significant technology advancements for missile systems by developing mature physical concepts to enhance anti-air kill probability, advanced ordnance with augmented overland cruise missile defense and theater ballistic missile defense capabilities, and advanced seeker technology. The program supports the full spectrum of missile advanced development and technology improvements and in future years will continue to provide the vehicle to address emergent requirements by transitioning mature development efforts into weapon systems with minimal technical and financial risk.

B. PROGRAM ACCOMPLISHMENTS AND PLANS:

The Guidance Integrated Fuze (GIF) program is the major constituent of the NNEO budget line, representing \$25M annually in FY04-FY06, and \$10M annually from FY07-FY09. Other NNEO programs include the Multi-Function Fuze (MFF) P3I and the Extended Range Propulsion Charge.

1. FY2004 PLANS:

(\$25M) GIF: Award two contracts for developing the GIF baseline design for high rate, low cost production. Evaluate 10 fuzes from each contractor in laboratory and simulated gun launch conditions to assess guidance, navigation and control features, conventional fuzing functions and shock survivability. Formally document all design and test data and provide to both contractors.

2. FY2005 PLANS:

(\$25M) GIF: Complete two additional design-build-test cycles, resulting in each contractor providing 25 (Jan 05) and 100 (Aug 05) fuzes for government evaluation. Perform the full spectrum of laboratory, simulation and gun launch tests to determine the best design. Award 1,250 fuze option to one contractor (Sep 05).

3. FY2006 PLANS:

(\$25M) GIF: 1,250 GIFs delivered (Apr 06): 150 for acceptance testing and 100 for operational assessment. The remaining 1,000 GIFs will be production representative hardware suitable for Field Training and Follow-on Test and Evaluation, as necessary.

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Exhibit R-2, RDTEN Budget Item Justification

(Exhibit R-2, page 1 of 36)

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /BA-4	R-1 ITEM NOMENCLATURE 0603609N/Conventional Munitions	
<p>Non-Nuclear Expendable Ordnance (NNEO) (Project 32299): This item addresses improvements to Navy surface launched (2T) NNEO. It supports transition of the Multi-Function Fuze (MMF) from E&MD to production.</p> <p>Insensitive Munitions Advanced Development (IMAD) (Project S0363): Most Navy munitions react violently when exposed to unplanned stimuli such as fire, shock and bullet impact, thus presenting a great hazard to ships, aircraft, and personnel. This IMAD program will provide, validate, and transition technology for explosives, propellants, and ordnance to enable production of munitions insensitive to unplanned stimuli with no reduction to combat performance.</p> <p>Environmentally Safe Energetic Materials (Project S2611): This project will mature and demonstrate energetic materials and processes for explosives, propellants, and pyrotechnics that minimize or eliminate any adverse environmental impact normally associated with these materials in production and demilitarization. These new environmentally safe materials will meet insensitive munitions and system performance requirements while lowering the total ownership costs of the weapon systems.</p>		

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Exhibit R-2, RDTEN Budget Item Justification
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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions			PROJECT NUMBER AND NAME K1821/Conventional Fuzed Warhead Package			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	17.355	13.390	13.713	14.580	14.994	18.553	18.848	19.176
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This program provides for orderly planning, timely maturation, and effective transition of Navy 6.2 and 6.3A investments in ordnance technology to missile/weapon systems end item System Development and Demonstration (SD&D) phase development. It is the only Navy 6.3B RDT&E program that addresses improvements in warhead and fuze technology. It focuses on increasing effectiveness against current and emerging threats and is responsive to all mission areas -- anti-air, strike, defense suppression, theater defense, and ship defense. On-going projects make advanced fuze and warhead technology available to and reduce the time and risk for specific system development programs by performing three important functions: (1) identify technology advances with the most potential to improve generic warhead and fuze safety, reliability, and effectiveness; (2) mature the most promising technologies with a goal of achieving Technology Readiness Level 6, or preferably TRL 7, and (3) transition mature technology to specific cruise missile, surface-to-air missile, and land attack weapons system development programs. The program supports the full spectrum of missile advanced development and technology improvements and in future years will continue to provide the vehicle to address emergent requirements by transitioning mature development efforts into weapon systems with minimal technical and financial risk.

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME K1821/Conventional Fuzed Warhead Package																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">11.582</td><td style="text-align: center;">8.156</td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">SM-2 Block IIIB MK 45 MOD 14 TDD: FY 02: Continued advanced development FY 03: Complete advanced development</div>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	11.582	8.156			RDT&E Articles Quantity				
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Exhibit R-2a, RDTEN Project Justification
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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-4	0603609N/Conventional Munitions	K1821/Conventional Fuzed Warhead Package

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	18.308	17.743	18.921	18.909
Current BES/President's Budget: (FY 04/05 Pres Controls)	17.355	13.390	13.713	14.580
Total Adjustments	-0.953	-4.353	-5.208	-4.329

Summary of Adjustments

Congressional program reductions		-4.000		
Congressional undistributed reductions				
Congressional rescissions	-0.039			
SBIR/STTR Transfer	-0.415			
Reprogrammings	-0.358			
Business Process Reform		-0.055		
Economic Assumptions	-0.049	-0.077	-0.020	-0.020
IT Cost Growth		-0.025		
Overhead and Direct Cost Reduction			-0.109	-0.158
Ftprint Reduction			-0.012	-0.018
Single Site Common Support			-0.017	-0.026
Reduction in Suort Contractors			-0.122	-0.208
Examine Non Core Competencies			-0.008	-0.009
FY03 FFRDC Reduction		-0.003		
FY02 Actuals	-0.092			
Inflation Savings		-0.146		
PBD 426			-0.011	
Non S&T R&D Offset			-1.552	
PBD 203 ACTD Offsets			-0.252	-0.318
NWCF Rates - R&D Fuel			0.011	0.018
PBD 604 Nonpay Inflation			-0.893	-0.854
PBD 630 Project Correction		-0.047		
Post Production R&D Continuation			-2.223	-2.736
Subtotal	-0.953	-4.353	-5.208	-4.329

Schedule: Not Applicable

Technical: Not Applicable

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Exhibit R-2a, RDTEN Project Justification

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Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 7 of 36)

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603609N/Conventional Munitions				PROJECT NUMBER AND NAME K1821/Conventional Fuzed Warhead Package					
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
Design and Analysis	WR	NSWC Dahlgren	31.561	0.060	10/02	0.500	11/03	1.000	11/04	Continuing	Continuing	
	WR	NAWC China Lake	61.616	2.085	10/02	2.993	11/03	3.000	11/04	Continuing	Continuing	
	CPAF	Raytheon	14.053	5.283	10/02	1.700	11/03	2.936	11/04	Continuing	Continuing	
	PR	JHU/APL	1.889	1.128	10/02	4.100	11/03	3.850	11/04	Continuing	Continuing	
	RC	ONR	0.052	0.015						0.000	0.067	
	MIPR	MIT/LL	0.400							0.000	0.400	
	WR	SPAWAR	0.520							0.000	0.520	
	WR	NSWC Port Hueneme	0.147							0.000	0.147	
	WR	NSWC Indian Head	0.800			0.500	11/03	1.000	11/04	Continuing	Continuing	
	PD	Office of Special Projects	8.994	1.400	10/02	1.250	11/03			0.000	11.644	
Hardware Fabrication	WR	NSWC Dahlgren	6.257							0.000	6.257	
	WR	NAWC China Lake	8.683							0.000	8.683	
	CPAF	Raytheon	8.516							0.000	8.516	
	PD	Office of Special Projects	41.549							0.000	41.549	
Subtotal Product Development			185.037	9.971		11.043		11.786		Continuing	Continuing	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-4			PROGRAM ELEMENT 0603609N/Conventional Munitions				PROJECT NUMBER AND NAME K1821/Conventional Fuzed Warhead Package					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Dahlgren	12.987							0.000	12.987	
	WR	NAWC China Lake	15.582							0.000	15.582	
	WR	WSMR								0.000	0.000	
	CPAF	Raytheon								0.000	0.000	
	WR	NSWC Port Hueneme		0.762	10/02					0.000	0.762	
Subtotal T&E			28.569	0.762		0.000		0.000				
Remarks:												
Program Management Support	WR	NSWC Dahlgren	2.074							0.000	2.074	
	WR	NAWC China Lake	3.360							0.000	3.360	
	C/FPI	Various	3.092	2.632	11/02	2.645	11/03	2.769	11/04	Continuing	Continuing	
	RC	NSWC Indian Head	0.160							0.000	0.160	
Travel	PD	NAVSEA Travel	0.350	0.025		0.025		0.025		Continuing	Continuing	
Subtotal Management			9.036	2.657		2.670		2.794				
Remarks:												
Total Cost			222.642	13.390		13.713		14.580		Continuing	Continuing	
Remarks:												

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 9 of 36)

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EXHIBIT R4, Schedule Profile: NOT APPLICABLE																								DATE: February 2003								
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4									PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions												PROJECT NUMBER AND NAME K1821/Conventional Fuzed Warhead Package											
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																																
Prototype Phase																																
Radar System Development																																
EDM Radar Delivery																																
Software 1XXSW Delivery 2XXSW Delivery																																
Test & Evaluation Milestones																																
Development Test																																
Operational Test																																
Production Milestones																																
LRIP I FY 05																																
LRIP II FY 06																																
FRP FY 07																																
Deliveries																																

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

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Exhibit R-4a, Schedule Detail: NOT APPLICABLE						DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT 0603609N/Conventional Munitions				PROJECT NUMBER AND NAME K1821/Conventional Fuzed Warhead Package			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA)								
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initail Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 11 of 36)

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA - 4		PROGRAM ELEMENT NUMBER AND NAME 0603609N Conventional Munitions			PROJECT NUMBER AND NAME 32299 Non-Nuclear Expendable Ordnance (NNEO)			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	0.897	0.916	25.773	25.778	25.782	10.930	10.941	10.957
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This budget item addresses improvements to Navy surface launched (2T) Non-Nuclear Expendable Ordnance (NNEO) outside existing operational capabilities. The commodities comprising 2T NNEO are : Major and medium caliber gun ammunition, small arms ammunition, other ship gun ammunition, pyrotechnics, and demolition items. There are no other RDT&E budget items supporting the 2T NNEO program. This project currently supports the Guidance Integrated Fuze (GIF) demonstration and incremental development program, Multi-Function Fuze (MFF) and Extended Range Propelling Charge. These items will be used with 5" caliber gun ammunition. GIF is a "smart fuze", conforming to DoD and NATO interface requirements, that can be retrofitted on all 105mm, 5" and 155mm projectiles. While retaining all necessary conventional fuzing functions, GIF will provide GPS accuracy to the entire inventory of conventional projectiles. Multi-Function Fuze program is nearing completion, and provides performance, safety and logisitcs enhancements to the existing inventory of Navy Conventional Fuzes. Extended Range Propelling Charge program will incorporate new technology into the production of an extended range propelling charge, increasing the range of 5" conventional ammunition in the 5"/62 caliber gun to 20 nautical miles.

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Continued and completed Qualification of Multi-Function Fuze.																			
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This program will incorporate new technology into production of an extended range propelling charge (20 nautical miles), improving producibility and performance.																			
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RDT&E Articles Quantity																			
This project currently supports the Guidance Integrated Fuze (GIF) demonstration and incremental development program. GIF is a "smart fuze", conforming to DoD and NATO interface requirements, that can be retrofitted on all 105mm, 5" and 155mm projectiles. While retaining all necessary conventional fuzing functions, GIF will provide GPS accuracy to the entire inventory of conventional projectiles.																			

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 13 of 36)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																																														
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA - 4	PROGRAM ELEMENT NUMBER AND NAME 0603609N Conventional Munitions	PROJECT NUMBER AND NAME 32299 Non-Nuclear Expendable Ordnance (NNEO)																																															
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R-1 SHOPPING LIST - Item No. 60

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603609N Conventional Munitions			PROJECT NUMBER AND NAME 32299 Non-Nuclear Expendable Ordnance (NNEO)			

D. OTHER PROGRAM FUNDING SUMMARY:

Related RDT&E: PE 0603795 Naval Surface Fire Support

<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>
BLIN 025000 5"/54 Ammunition	0	0	0.7	0.7	0	0	0	0	N/A	N/A

E. ACQUISITION STRATEGY:

-Award 5-Year (Multi-Option) Contract for MFF.
 -Award single year competitive contract for Extended Range Propelling Charge.
 -Award two contracts for developing the GIF baseline design for high rate, low cost production. Evaluate 10 fuzes from each contractor in laboratory and simulated gun launch conditions to assess guidance, navigation and control features, conventional fuzing functions and shock survivability. Formally document all design and test data and provide to both contractors. Complete two additional design-build-test cycles, resulting in each contractor providing 25 and 100 fuzes for government evaluation. Perform the full spectrum of laboratory, simulation and gun launch tests to determine the best design. Award 1,250 fuze option to one contractor.

F. MAJOR PERFORMERS:

MFF: Contractor - Alliant Tech Systems (ATK), Janesville, WI - Awarded July 99
 Gov't - Naval Surface Warfare Center, Dahlgren Division, Dahlgren, VA
 Extended Range Propelling Charge: Gov't - Naval Surface Warfare Center, Indian Head Division, Indian Head, MD
 Guidance integrated Fuzing - Contractor - unknown at this time, TBD
 Gov't - Naval Surface Warfare Center, Dahlgren Division, Dahlgren, Virginia
 Army Research, Development & Engineering Center (ARDEC), Picatinney Arsenal, Picatinney, NJ

R-1 SHOPPING LIST - Item No. 60

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CLASSIFICATION:

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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 4			0603609N Conventional Munitions			32299 Non-Nuclear Expendable Ordnance (NNEO)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s 99/02 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	WR	NSWC Dahlgren	1.933								1.933	
	C/CPFF	ALLIANT	1.054								1.054	
	SS/CPFF	MOTOROLA	0.336								0.336	
	WR	NSWC Indian Head	0.600			0.445		0.448			1.493	
	CPFF	GIF Contractor 1				10.130	10/03	12.002	TBD		22.132	
	CPFF	GIF Contractor 2				10.130	10/03	2.338	TBD		12.468	
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			3.923	0.000		20.705		14.788		0.000	39.416	
Remarks:												
Development Support	WR	NSWC Dahlgren				0.500		0.350			0.850	
Software Development	WR	NSWC Dahlgren				0.275		0.200			0.475	
Training Development	WR	NSWC Dahlgren						0.125			0.125	
Training Development	MIPR	ARDEC						0.350			0.350	
Integrated Logistics Support	WR	NSWC Dahlgren						0.175			0.175	
Integrated Logistics Support	MIPR	ARDEC						0.480			0.480	
Configuration Management	WR	NSWC Dahlgren				0.350		0.400			0.750	
Contract Support	WR	NSWC Dahlgren				0.150		0.350			0.500	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		1.275		2.430		0.000	3.705	
Remarks:												

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Exhibit R-3, Project Cost Analysis

CLASSIFICATION:

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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 - 4			0603609N Conventional Munitions			32299 Non-Nuclear Expendable Ordnance (NNEO)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s 99/02 Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Dahlgren	0.528			0.780		1.630			2.938	
	WR	NSWC China Lake	0.200								0.200	
	WR	ARL				0.300					0.300	
Operational Test & Evaluation	WR	COMOPTEFOR	0.200			0.200		0.330			0.730	
	WR	NSWC Dahlgren				0.128					0.128	
	MIPR	ARDEC						0.950			0.950	
Live Fire Test & Evaluation											0.000	
Test Assets	C/CPFF	ALLIANT		0.363	10/02						0.363	
	WR	NSWC Indian Head						0.400			0.400	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.928	0.363		1.408		3.310		0.000	6.009	
Remarks:												
Contractor Engineering Support	FP	EDO	0.032								0.032	
	C/CPFF	ALLIANT		0.113	10/02						0.113	
	FP	Various				0.200		0.600			0.800	
Government Engineering Support	WR	NSWC Dahlgren	0.293	0.440		1.235		3.100			5.068	
Government Engineering Support	MIPR	ARDEC/ARL				0.400		0.600			1.000	
Program Management Support	WR	NSWC Dahlgren	0.093			0.350		0.650			1.093	
Program Management Support	MIPR	ARDEC				0.200		0.300			0.500	
Travel	WR	NSWC Dahlgren	0.020								0.020	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.438	0.553		2.385		5.250		0.000	8.626	
Remarks:												
Total Cost			5.289	0.916		25.773		25.778		0.000	57.756	
Remarks:												

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R-1 SHOPPING LIST Item No. 160

Exhibit R-3, Project Cost Analysis

(Exhibit R-3, page 17 of 36)

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																					DATE:											
APPROPRIATION/BUDGET ACTIVITY										PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME												
RDT&E, N / BA-4										0603609N Conventional Munitions										32299 Non-Nuclear Expendable Ordnance (NNEO)												
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									MS B △						MS C △	LRIP1 Dec △		LRIP2 Dec △				☆ IOC	FRP Dec △									
Prototype Phase																																
GIF Development & Demonstration											PDR △		GDR △		PRR-1 △		PRR-2 △															
GIF P3I																																
Test & Evaluation Milestones																																
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Operational Test																																
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LRIP2 FY 05																																
LRIP2 FY06																																
FRP FY08																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 60

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

CLASSIFICATION:

[illegible]

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EXHIBIT R-2a, RDT&E Project Justification							DATE: FEBRUARY 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions				PROJECT NUMBER AND NAME S0363/Insensitive Munitions Advanced Development			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	2.766	3.682	3.053	3.103	3.090	3.639	3.704	3.773
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Most Navy munitions react violently when exposed to unplanned stimuli such as fire, shock and bullet impact, thus presenting a great hazard to ships, aircraft and personnel. This program will provide, validate and transition technology to all new weapon developments and priority weapon systems and enable production of munitions insensitive to these stimuli with no reduction in combat performance. The Insensitive Munitions Advanced Development (IMAD) Program is the Navy's focused effort on propellants, propulsion units, explosives, warheads, fuses and pyrotechnics to reduce the severity of cook-off and bullet/fragment impact reactions, minimizing the probability for sympathetic detonation, both in normal storage and in use, increasing ship survivability and satisfying performance and readiness requirements. Each technology area is divided into subtasks addressing specific munition/munition class IMAD deficiencies. Energetic materials producibility is demonstrated to assure national capability to produce and load munitions systems. The program is being closely coordinated with other Military Departments, NATO and allied countries to eliminate redundant efforts and maximize efficiency. A joint service IMAD requirement has been developed. Insensitive munitions are identified as a DoD critical technology requirement and considered as part of a weapon design per DoD 5000.2R.

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EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME S0363/Insensitive Munitions Advanced Development																	
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R-1 SHOPPING LIST - Item No. 60

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME S0363/Insensitive Munitions Advanced Development																	
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RDT&E Articles Quantity																			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME S0363/Insensitive Munitions Advanced Development		

C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget: (FY 03 Pres Controls)	2.851	3.765	4.021	3.829
Current BES/President's Budget: (FY04 Pres Controls)	2.766	3.682	3.053	3.103
Total Adjustments	-0.085	-0.083	-0.968	-0.726
Summary of Adjustments				
Reprogrammings	-0.057	0.000	-0.472	-0.554
Miscellaneous Adjustments	-0.028	-0.083	-0.496	-0.172
Subtotal	-0.085	-0.083	-0.968	-0.726

Schedule:
NOT APPLICABLE

Technical:
NOT APPLICABLE

R-1 SHOPPING LIST - Item No. 60

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2003
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME S0363/Insensitive Munitions Advanced Development
D. OTHER PROGRAM FUNDING SUMMARY: NOT APPLICABLE		
E. ACQUISITION STRATEGY: NOT APPLICABLE		
F. MAJOR PERFORMERS: NAWC WPN DIV/China Lake - Propulsion Development and Evaluation 11/02 NOSSA/Indian Head - Program Management and Explosive Development 11/02		

R-1 SHOPPING LIST - Item No. 60

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: FEBRUARY 2003				
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-4			PROGRAM ELEMENT 0603609N/Conventional Munitions			PROJECT NUMBER AND NAME S0363/Insensitive Munitions Advanced Development						
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
Propulsion Dev. And Eval.	WR	NAWC WPN DIV/China Lake	83.931	1.492	11/02	1.127	11/03	1.130	11/04	Continuing	Continuing	NA
	RCP	NAWC WPN DIV/China Lake	10.250	0.000	NA	0.000	NA	0.000	NA	NA	10.250	NA
Explosives Dev. And Eval.	WR	NSWC/Indian Head Div.	68.334	0.898	11/02	0.693	11/03	0.693	11/04	Continuing	Continuing	NA
Ordnance Dev. And Eval.	WR	NSWC/Dahlgren Div.	19.338	0.048	11/02	0.035	11/03	0.037	11/04	Continuing	Continuing	NA
Pyrotechnic Dev. And Eval.	WR	NSWC/Crane Div.	6.553	0.007	11/02	0.010	11/03	0.005	11/04	Continuing	Continuing	NA
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			188.406	2.445		1.865		1.865		Continuing	Continuing	NA
<p>Remarks: This cost category includes technology development and subsequent test and evaluation of Insensitive Munitions concepts for propulsion, explosives, ordnance and pyrotechnics. Environmentally Safe Energetics Development was a Congressional add for FY 99 (in S2611) and FY 00 (in S0363). The efforts transitioned to S0363 in FY 00.</p>												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
<p>Remarks:</p>												

R-1 SHOPPING LIST - Item No. 60

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 25 of 36)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: FEBRUARY 2003		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDTE, N / BA-4			0603609N/Conventional Munitions			S0363/Insensitive Munitions Advanced Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: This project, S0363, IMAD, is a Non-ACAT program. As such no formal, separate Development or Operational Test (DT or OT) and evaluation plans or efforts are included. Formal DT and OT is conducted once the concepts developed by IMAD are transitioned to weapon development and product improvement programs.												
Contractor Engineering Support											0.000	
Program Management Support	WR	NSWC/Indian Head Div.	29.926	0.000	NA	0.000	NA	0.000	NA	NA	29.926	NA
Program Management Support	WR	NOSSA	0.291	1.203	11/02	1.157	11/03	1.205	11/04	Continuing	Continuing	NA
Travel	WR	NOSSA	0.348	0.034	11/02	0.031	11/03	0.033	11/04	Continuing	Continuing	NA
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			30.565	1.237		1.188		1.238		Continuing	Continuing	NA
Remarks:												
Total Cost			218.971	3.682		3.053		3.103		Continuing	Continuing	NA
Remarks:												

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Exhibit R-3, Project Cost Analysis
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CLASSIFICATION:

EXHIBIT R4, Schedule Profile: NOT APPLICABLE																								DATE: FEBRUARY 2003								
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4										PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions										PROJECT NUMBER AND NAME S0363/Insensitive Munitions Advanced Development												
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																																
Prototype Phase																																
Radar System Development																																
EDM Radar Delivery																																
Software 1XXSW Delivery 2XXSW Delivery				SSR																												
Test & Evaluation Milestones																																
Development Test																																
Operational Test																																
Production Milestones																																
LRIP I FY 05																																
LRIP II FY 06																																
FRP FY 07																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 60

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

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Exhibit R-4, Schedule Profile
(Exhibit R-4, page 27 of 36)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-4a, Schedule Detail: NOT APPLICABLE						DATE: FEBRUARY 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT 0603609N/Conventional Munitions				PROJECT NUMBER AND NAME S0363/Insensitive Munitions Advanced Development		
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA)								
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initail Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

R-1 SHOPPING LIST - Item No. 60

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 28 of 36)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: FEBRUARY 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions				PROJECT NUMBER AND NAME S2611/Environmentally Safe Energetic Materials			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	2.466	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The development, manufacture and demilitarization of energetic materials generate significant quantities of waste. The generation and subsequent disposal of this waste has come under increased scrutiny and regulation by Federal, State and local officials. Additionally, due to environmental compliance and waste disposal issues, the cost of energetic materials is rapidly increasing. New technologies, energetic materials and ingredients that minimize any adverse environmental impact are being developed within the Navy's science and technology initiatives. These technologies are commonly referred to as "green" energetic materials. The efforts under this project will provide, validate, and transition technology for explosives, propellants and pyrotechnics using materials and compositions that have low adverse environmental impact in production and demilitarization, will meet insensitive munitions requirements and will have no reduction to combat performance.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME S2611/Environmentally Safe Energetic Materials		
B. Accomplishments/Planned Program				
	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.466	0.000	0.000	0.000
RDT&E Articles Quantity				
<div>Continued identification and evaluation of low cost thermoplastic elastomer binders. Evaluated candidate bomb fill with reduced environmental impact in manufacturing and demilitarization. Continued to evaluate properties of reclaimed energetic ingredients for use in Navy explosives and propellants. Initiated the development and evaluation of an insensitive green minimum smoke propellant. Evaluated and predicted the environmental effect and associated life cycle costs for energetic materials and processes. Began the development of a methodology and measurable parameters to evaluate the environmental effects of energetics manufacturing, use and demilitarization.</div>				
	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 30 of 36)

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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-4		0603609N/Conventional Munitions		S2611/Environmentally Safe Energetic Materials			
C. PROGRAM CHANGE SUMMARY:							
Funding:		FY 2002	FY 2003	FY 2004	FY 2005		
Previous President's Budget: (FY 03 Pres Controls)		2.478	0.000	0.000	0.000		
Current BES/President's Budget: (FY04 Pres Controls)		2.466	0.000	0.000	0.000		
Total Adjustments		-0.012	0.000	0.000	0.000		
Summary of Adjustments:							
Economic Assumptions		-0.012					
		-0.012	0.000	0.000	0.000		
Schedule:							
NOT APPLICABLE							
Technical:							
NOT APPLICABLE							

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Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 31 of 36)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2003
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME S2611/Environmentally Safe Energetic Materials
D. OTHER PROGRAM FUNDING SUMMARY: NOT APPLICABLE		
E. ACQUISITION STRATEGY: NOT APPLICABLE		
F. MAJOR PERFORMERS: NSWC Indian Head Division - Technology Development 11/01		

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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-4			0603609N/Conventional Munitions			S2611/Environmentally Safe Energetic Materials						
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
Technology Development	WR	NSWC/Indian Head Div.	5.295	0.000	NA	0.000	NA	0.000	NA	NA	5.295	NA
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			5.295	0.000		0.000		0.000		0.000	5.295	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 33 of 36)

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: FEBRUARY 2003		
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4			PROGRAM ELEMENT 0603609N/Conventional Munitions			PROJECT NUMBER AND NAME S2611/Environmentally Safe Energetic Materials						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	WR	NSWC/Indian Head Div.	0.137	0.000	NA	0.000	NA	0.000	NA	NA	0.137	NA
Travel	WR	NOSSA	0.010	0.000	NA	0.000	NA	0.000	NA	NA	0.010	NA
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.147	0.000		0.000		0.000		0.000	0.147	
Remarks:												
Total Cost			5.442	0.000		0.000		0.000		0.000	5.442	
Remarks:												

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile: NOT APPLICABLE																								DATE: FEBRUARY 2003								
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4										PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions										PROJECT NUMBER AND NAME S2611/Environmentally Safe Energetic Materials												
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																																
Prototype Phase																																
Radar System Development																																
EDM Radar Delivery																																
Software 1XXSW Delivery 2XXSW Delivery																																
Test & Evaluation Milestones																																
Development Test																																
Operational Test																																
Production Milestones																																
LRIP I FY 05																																
LRIP II FY 06																																
FRP FY 07																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 60

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

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Exhibit R-4, Schedule Profile
(Exhibit R-4, page 35 of 36)

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail: NOT APPLICABLE						DATE: FEBRUARY 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT 0603609N/Conventional Munitions				PROJECT NUMBER AND NAME S2611/Environmentally Safe Energetic Materials		
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA)								
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initail Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 36 of 36)